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Impact of Alternative Financing Programs on Quality of Life and Employment Outcomes of Individuals with Disabilities

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IMPACT OF ALTERNATIVE FINANCING PROGRAMS ON QUALITY OF LIFE AND EMPLOYMENT OUTCOMES OF INDIVIDUALS WITH DISABILITIES

A Dissertation Submitted in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy at Virginia Commonwealth University

by

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Acknowledgments

To my precious son, Donel Alexander, I dedicate this achievement to you. When I began this journey, your father and I were engaged to be married. As he began law school at the University of Richmond, I decided it was time to take my education and career to the next level. One year into my degree program, we married. Another year later, you came along and we were beyond happy. Three weeks before you were born, I finished taking my comprehensive exams and I was sure it would be all downhill from there. Boy was I wrong! After a semester of maternity leave, I began the dissertation process in the midst of the Army moving us from Richmond, VA, to Fort Irwin, CA. We settled in and I began to write, study, and research. There were some tough times, but none like the last few weeks.

As the dissertation process came to a close, I was forced to work long hours at my computer; many times at your expense. My sincere apologies to you, Donel. Even though you'll never really remember this hardship, it weighs heavy on my heart. I considered quitting many times because the look of disappointment on your face when I couldn't play with you was too much to bear. The encouragement and support of your father and all of your grandparents kept me going. I was also able to maintain focus and remain strong for two reasons, one of which was the opportunity to write this letter to you in hopes that you'll read it as a grown man. The other was the hope that I'd become the kind of mother a son could be proud of. I wanted to make something of myself, set an example, and make you proud. All of these months I kept thinking that if you were all

grown up, and my friend, you'd encourage me to be the best of myself and enjoy a full-filling career. If you were "grown up Donel" you'd encourage me to keep going, not to quit. So I didn't. Here I am, one week from graduation, and I've done it! I feel proud and purposeful. I've put myself in a position to care for you, stand next to your father an intelligent woman, and set an example of perseverance. I can only pray that you feel that way about me too. I know, as a 2 year old boy, you don't understand why I couldn't "play twucks" every time you asked. As a man, I hope that you feel I made the right decisions and am the mother a son like you deserves. I hope that by the time you read this you'll realize that the most important "job" I've held over the years is *Mother*. Maybe I'll enjoy a long career, maybe that's not what's in store for me. What I do want you to realize is that no job in the world is more important, more fun, or more full-filling than being your mom. You are the center of our world Donel. Your father and I love you unconditionally. You bring joy to our lives in a way that no other thing, place or person could. I love you! Now...let's play twucks!

Your Loving Mother,

Dr. Amy Davis

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Abstract

IMPACT OF ALTERNATIVE FINANCING PROGRAMS ON QUALITY OF LIFE AND EMPLOYMENT OUTCOMES OF INDIVIDUALS WITH DISABILITIES

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A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University.

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This study investigated the effect of assistive technologies purchased through Alternative Financing Programs (AFP) for individuals with disabilities on quality of life, independence in the home and community, and employment. In fiscal year 2000, AFPs received federal grants under the Technology-Related Assistance for Individuals with Disabilities Act (after it was repealed and renamed the AT Act) to provide financial loans to persons with disabilities to enable them to purchase assistive technologies (AT). In fiscal year 2002, Congress appropriated funds to support grants to increase access to telework for individuals with disabilities. There are 33 AFPs located across the U.S. and territories that use said funding to provide alternative financing for persons with disabilities so that the aforementioned opportunities are possible.

This study also examined telework, defined as a way to reduce or eliminate barriers to employment or self-employment. Telework, irrespective of the circumstance or initial motivation, has the potential to circumvent the need to navigate the traditional

workplace. As a result, telework could raise the standards for equality in the job market for persons with disabilities.

An examination of AFP clients delineated loan acceptance and rejection rates, goals for acquiring assistive technologies, and employment outcomes for said individuals with disabilities. Determining the reasons why AFP clients needed assistive technology and how they planned to use it defined predictors to successful employment outcomes.

Finally, the overall effectiveness of the AFPs with respect to increasing quality of life, independence, and employment rates for persons with disabilities was assessed. Examining employment outcomes as they are linked to public policy is puissant and a connection not previously pursued.

This study found statistically significant associations between quality of life and employment in that persons with disabilities who were AFP applicants reported a higher quality of life if they were employed. Also found, was a statistically significant association between quality of life and independence levels in that persons with disabilities who reported increased independence at home or in the community also reported having a better quality of life.

CHAPTER I: Introduction

Statement of the Problem

Despite the many disadvantages that persons with disabilities encounter, people diagnosed with a plethora of disabilities have been shown to be capable of leading highly effective and enjoyable lives (Reinhold-Keller et al., 2002). Authors of this same study examined the effectiveness of employment in increasing the quality of life of individuals diagnosed with Wegener's granulomatosis and found that patients diagnosed with that specific condition experienced a higher quality of life when they were employed compared to unemployed persons diagnosed with the same condition (Reinhold-Keller et al., 2002). Miller and Dishon (2006) also found that employed persons with disabilities were statistically significantly more likely to have a higher quality of life. Further, Bala et al. (2005) similarly investigated the quality of life of persons with disabilities and found that those who stated they experienced a higher quality of life were more likely to be employed. These findings are very important due to the fact that persons with disabilities were found to have an overall lower quality of life than people who were not diagnosed with a physical malady (Sareen et al., 2006). The interaction between disability, quality of life, employment and assistive technology will be the impetus for this study.

Unemployment and underemployment of citizens with disabilities continues to pose a significant problem (West, 2005). Houtenville (2000), analyzing data from the Current Population Survey (CPS) from 1980 to 1998, reported that employment rates for

individuals with disabilities were at a two-decade low during the late 1990s. In 1998, 95.1% of men without disabilities were working, compared to 34.4% of men with disabilities; for women, the employment rates were 80.8% for those without disabilities and 29.5% with disabilities (Houtenville, 2000). Moreover, in most areas of the country, employment rates for individuals with disabilities were found to be declining, even during periods of economic expansion.

The determinants of this issue are varied (Houtenville, 2000). For individuals with psychiatric disabilities, episodic symptoms, hospitalizations, and employer/co-worker fears have been found to contribute to poor employment histories. For those with mobility impairments, typical contributing factors included a lack of affordable and reliable transportation, limited numbers of accessible businesses, and a lack of personal assistance services in the workplace (Houtenville, 2000). For chronic fatigue or pain, a common barrier was that employers were found to sometimes be unwilling or unable to accommodate needs for extended rest periods, alternative scheduling, or reallocation of work duties (Houtenville, 2000). Further, as a result of some of these issues, employment discrimination was found to be common across all disability groups, whether in hiring, advancement, or termination (Cleaver, 1999).

In order to attempt to correct, mitigate, or improve this issue, several pieces of legislation have been put into place over the years. The Technology-Related Assistance for Individuals with Disabilities Act (the "Tech Act") was originally passed in 1988 (Disability Policy Collaboration, 2004). It was reauthorized in 1994. The Tech Act of

1994 was repealed in 1998, being replaced with the Assistive Technology Act (the "AT Act"), which was amended in 2004 (Access IT, University of Washington, 2010).

The purpose of the Tech Act is to ensure that persons with disabilities have a way to access and purchase assistive technology. To achieve this goal, the Tech Act provides four major programs: 1) State Grant Programs; 2) Alternative Financing Programs; 3) Protection and Advocacy for Assistive Technology programs; and 4) national Technical Assistance programs (Disability Policy Collaboration, 2004).

The first federal funding received by AFPs came in fiscal year 2000 via the Assistive Technology Act. Prior to this, AFPs were state funded, as stated below via the Federal Register in 2005:

> The Assistive Technology Act of 1998, as amended (AT Act), authorizes support for activities that increase the availability of, funding for, access to, provision of, and training about assistive technology (AT) devices and AT services. Under section 4(e)(2) of the AT Act, the Secretary is authorized to provide support for States to develop, support, expand, or administer alternative financing programs (http://www07.grants.gov).

The AT Act provided federal funding to States so they could provide financing or subsidies (AT Act of 1998, http://www.section508.gov/docs/AT1998.html). Specifically, it authorized a low-interest loan fund, an interest buy-down fund, a loan guarantee or insurance program, and short-term loans of assistive technology devices (AT Act of 1998, http://www.section508.gov/docs/AT1998.html).

AFPs typically provide low interest loans to persons with disabilities so they can obtain assistive technology (NewWell Fund, http://www.atlfa.org). They also provide loans for persons with disabilities so they can obtain the necessary equipment for teleworking or for obtaining equipment to start home businesses (NewWell Fund, http://www.atlfa.org).

There are two ways in which assistive technologies can help persons with disabilities integrate into the community, assist in daily activities, and find or continue to work, all of which propose to contribute to a better quality of life. First, through the provision of technological and mobility assistance, persons with disabilities may be able to commute more easily to their place of work, operate more easily at their place of work, communicate more easily with those around them and simply function on a higher level than they were previously capable of doing. This increased functionality, through the help of assistive technologies, could provide for increased ability to find and maintain employment, increased community integration, and increased functionality in daily activities.

Second, assistive technologies can provide for the increased ability to find or maintain employment by expanding opportunities to work from home. This type of assistive technology use will, for the purposes of this study, be referred to as telework. Telework is precisely defined in subsequent sections. It is clear though, that the use of technology that allows persons with disabilities to work from home has the potential to greatly and positively impact employment and quality of life for this population.

The problems to be assessed in this study will be the effectiveness of the AFPs with respect to increasing quality of life, independence at home and in the community, and employment rates for persons with disabilities. This study will also investigate telework as an alternative to traditional assistive technologies, the goals of AFP clients in their pursuit of assistive technologies, and the overall effectiveness of the Tech Act in light of said goals.

Rationale for Study of Problem

The ability of persons with disabilities to find and maintain employment is an international issue (Lunt & Thornton, 1994). The authors found, in a fifteen country study, that there were three main directives for framing policy in this area. Those policies revolved around legislative measures, open employment-financial employment support services, and sheltered or supported provisions (Lunt and Thornton, 1994).

According to the AT Act, "as technology has come to play an increasingly important role… in the conduct of business, in the functioning of government, in the fostering of communication, in the conduct of commerce, and in the provision of education, its impact upon the lives of the more than 50,000,000 individuals with disabilities… has been comparable to its impact upon the remainder of the citizens…" (The AT Act, 1998). But technology, and the potential for telework, does not merely represent the opportunity for individuals with disabilities to seek gainful employment by working from home. There is an important distinction between teleworking and telecommuting. According to Baker, Moon and Ward (2006), telecommuting occurs

when “the work is primarily shifted in locale,” whereas “telework is a restructuring of the tasks to be accomplished within the larger work setting which could result in ‘work’ being done remotely, or collaboratively with coworkers (remotely or not)” using information communication technologies (p. 421).

Throughout this review, assistive technology is defined in a plethora of ways, one of which to consider is telework. It is fair to propose that telework is also one *type* of assistive technology. When discussing the types of loans Alternative Financing Programs support, one should reflect on Baker, Moon and Ward (2006) and their distinction between telecommuting and telework. In this respect, a loan for assistive technology could be obtained for the purpose of telework and would be comparable to purchasing assistive devices. This is not easily discernable from a “telework” loan distributed for the purpose of telecommuting. Unfortunately, this distinction is rarely made and the terms “telework” and “telecommute” are used interchangeably by many.

The existence of telework also represents a fundamental shift in the global economy. In a study of telework, Milpied (1995) remarks:

> In industrial societies, the choice of the living place depended on the place of work. With the emergence of the so-called “information society” where “new forms of economic and social organizations” appear “no longer subject to geographical constraints but depend on telecommunication networks” people are therefore able to make the opposite choice: to work at the place where they have decided to live in. (p. 243)

Telecommuting has become a viable, widespread alternative around the world in industrialized countries. Fortunately, this progress specifically benefits those with disabilities. According to Milpied (1995):

> Actual telework developments do not especially apply to people with disabilities and their specific requirements. When promoting telework, the general objective is to reduce overheads. Nevertheless, taking into account the economic situation it is not possible to stand people with disabilities aside from employment opportunities telework can offer them. (p. 243)

Teleworking has achieved mixed success in the United States. According to Baker and Fairchild (2005):

> In the U.S., surveys indicate that around 2.8 million employees telework regularly, and that approximately 17% of Americans teleworked full-time while 30% teleworked at least one day a week. Some 45% of teleworkers with a separate office in the home perceive an improved quality of life – work, home and social – as a result of the telework arrangement. (p. 35)

Of this percentage, however, only some have disabilities. Individuals with disabilities continue to be chronically unemployed and underemployed. Despite the apparent need and necessity of teleworking for individuals with disabilities, the number of individuals with disabilities teleworking in the United States is thought to be relatively small (Eaton, 1998). In a survey of teleworkers with disabilities in the federal government, only 1,764 employees out of 1,806,192 teleworked because of disability due to medical reasons (United States Office of Personnel Management, 2002). There appear to be many more workers interested in telework than are able to do so, in part because of the reluctance of employers to provide that option (Mokhtarian, Bagley & Salomon,

1998). Some reasons for employer reluctance are concerns about unmonitored work, supervision and evaluation, network security concerns, and implementation costs (Eaton, 1998; Korzeniowski, 1999; Nilles, 1997).

In introducing telework as alternative employment opportunities for persons with disabilities, it is critical that human resource representatives and managers receive basic training in legal and liability issues, supervisory strategies, policy development, employee selection criteria, productivity measures, work safety, and co-worker relations in order to obtain support from upper level management (Mommaerts, 2003). Telework is also most successful when the employer is interested in offering telework to a large number of employees throughout the organization, in addition to employees with disabilities (Mommaerts, 2003). Telework has also been linked to increased quality of life. In a study by Leung & Lee (2004), individuals reported a higher quality of life after gaining the ability to telecommute.

The availability of assistive technologies can promote telework and possibly assist individuals with disabilities in finding or maintaining employment, both of which have been shown to increase quality of life. Programs such as the Tech Act and the AT Act provided further funding and support for the AFPs by disbursing funds to persons with disabilities in order to provide better access to assistive technologies and telework loans. The effectiveness of the measures has not been sufficiently studied. This lack of sufficient research provides the background for this investigation.

Statement of Purpose

The purpose of this study is to examine overall quality of life, independence, and employment outcomes for AFP clients. As well as the effectiveness of the AFPs in increasing employment opportunities for persons with disabilities, telework as an alternative to traditional assistive technologies, the goals of AFP clients, and the overall effectiveness of the Tech Act will also be assessed. This study will seek to examine these issues through a quantitative approach that explores survey data. The sample of individuals will include those whose AFP applications were both accepted and denied. The analytic methodologies that drive this study in its pursuit of this stated purpose will be the use of Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests, and Ordered Logistic Regression Modelling.

The significance of this study relates to the ability of persons with disabilities to increase independence in the home and community, find or maintain employment, and investigate the affect that these two goals have on quality of life. AFPs have been operating under review and the assumption that they have been providing assistance to persons with disabilities with respect to increasing their overall level of accessibility. Increased levels of accessibility provide a better quality of life, which has been shown to be a factor in employment (Bala et al., 2005). This study, through a quantitative survey approach, will attempt to validate those claims and assumptions through indirect contact with individuals who are currently under the auspices of the AFPs. The practical significance of this study will thus be to provide independence levels, goals, quality of

life views, assistive technology use, employment outcomes and telework outcomes for persons with disabilities who are also AFP clients.

Definitions

This section will provide definitions to terms that will be used throughout the study. These terms are central to the study and are common within the industry under investigation. The terms and their definitions and specifications follow:

Disability: The Americans with Disabilities Act (ADA) of 1990 defined "disability" as "(a) physical impairment that substantially limits one or more of the major life activities of such an individual; (b) a record of such impairment; or (c) being regarded as having such an impairment" (42 USC 12001 (2) as cited in Finch, 2006). This definition will be used in this study as the definition of a person or persons with a disability.

Quality of Life: Felce and Perry (1995) defined quality of life as a multidimensional measure including five standard attributes: (a) physical wellbeing; (b) material wellbeing; (c) social wellbeing; (d) emotional wellbeing; and (e) development and activity. Quality of life is very subjective and has been defined in many arenas. Quality of life as defined by Ruut Veenhoven is a "classification based on two bi-partitions." (Veenhoven 1999) Veenhoven states that quality of life is defined between life 'chances' and life 'results', and between 'outer' and 'inner' qualities. Together these

partitions create four qualities of life: 1) livability of the environment; 2) life-ability of the individual; 3) external utility of life; and 4) inner appreciation of life (Veenhoven 1999).

Other definitions of quality of life include the "Popsicle Index," which was coined by Catherine Austin Fitts as "the percentage of people in a community who believe that a child in their community can safely leave their home, walk to the nearest store to buy a popsicle and walk home." (Fitts 2003). The term quality of life has long been used by politicians, economists and sociologists when referring to "Gross National Happiness." However, for the purpose of this study, quality of life will be considered using standards similar to Felce and Perry. Quality of life will be measured with five attributes: (a) physical wellbeing; (b) mental wellbeing; (c) social wellbeing; (d) emotional wellbeing; and (e) satisfaction of activity level.

Assistive Technology (AT): Assistive Technology (AT) is technology that is used by individuals with disabilities in order to perform functions that might otherwise be difficult or impossible (NIDRR, 2007). Assistive technology has been known to include mobility devices such as walkers and wheelchairs, as well as hardware, software, and peripherals that assist persons with disabilities in accessing computers or other information technologies (NIDRR, 2007). For instance, people with limited hand function may use a keyboard with large keys or a special mouse to operate a computer. Individuals who are blind may use software that reads text on the screen in a computer-generated voice. Similarly, citizens with low vision may use software that enlarges

screen content, people who are deaf may use a TTY (text telephone), or persons with speech impairments may use a device that speaks out loud as they enter text via a keyboard (NIDRR, 2007). Each of these examples provides the type of assistive technology or AT, that will be pertinent to this study.

A formal, legal definition of assistive technology was first published in the Technology-Related Assistance for Individuals with Disabilities Act of 1988 defining assistive technology as “technology designed to be utilized in an assistive technology device or assistive technology service." (The Tech Act) (NIDRR, 2007). This act was amended in 1994. Later, in 1998, it was repealed and replaced with the Assistive Technology Act of 1998 ("AT Act"). Despite these aforementioned changes in legislation, the original definition of assistive technology remains constant (NIDRR, 2007). This same definition was used in the Access Board's Electronic and Information Technology Accessibility Standards, developed as required by 1998 amendments to Section 508 of the Rehabilitation Act (NIDRR, 2007).

In addition to the examples given in the first paragraph of this definition, there is a tremendous variety of assistive technology presently available. These technologies provide the opportunity for nearly all people to access information technology (IT) and thus participate in the workforce.

Employment: Employment, as defined in this study, is the agreement between an employee and an employer, whereby the employee conducts work by the direction of the employer and is paid for his or her services. Within the scope of this study, it is important

to make the distinction between employment and self-employment. Grants, loans, and funding for AT, through governmental and nongovernmental programs, can be given to a worker with a disability who seeks to be employed by an independent firm; also, funding can be applied for individuals who are self-employed, either owning their own business or working as independent contractors. Further, many individuals find numerous different types of employment that cannot be neatly categorized. For instance, someone might work as an independent contractor and also could be a part-time employee for another firm, while at the same time seek grants to start his or her own business. For the purposes of this study, employment will be considered in the traditional sense, in that an employee is seeking paid work with another and telework grants for the purpose of telecommuting, telework or self-employment will be considered paid work as well.

Telework: Telework or telecommuting has been defined as alternative working arrangements for employees where physical location is at home or somewhere other than a main office. One definition in the literature of these terms was provided by Gray et al. (1993); defined as:

> Teleworking or "telecommuting" is a flexible way of organizing work without the need of the physical presence of the worker at his work place during important parts of his working hours. The professional activity of teleworking implies the frequent use of electronic information processing techniques and the extensive use of telecommunication equipment (e.g. telephone, answering machine, fax, networked computers, and other advanced telecomms services such as ISDN, voice mail, audio and video

conferencing, call diversion, mobile telephone, etc...). (Gray et al, 1993 p.10)

While those two terms are often found to be used interchangeably, telework has also been found to refer to non-home-based work settings. Those settings include call centers or cottages (Craumer and Marshall, 1997). For the purposes of this study, the term telework will be more clearly and concretely defined as "working at home during business hours one or more days a week, using a combination of computing and communications technology to stay productive and connected to the office and client" (Craumer & Marshall, p. 94).

The Technology-Related Assistance for Individuals with Disabilities Act: The Technology-Related Assistance for Individuals with Disabilities Act (the Tech Act) is a public law that was passed in 1988 and reauthorized in 1994. The purpose of the Tech Act was to provide a way for persons with disabilities to obtain access to assistive technology. To that end, the Tech Act provided federal funding (starting in 2000, under the AT act) to states to start programs with would, among other things, allow persons with disabilities to obtain loans to purchase assistive technology. The rationale behind doing this was to ensure that persons with disabilities were able to obtain the assistive technology which would enable them to enjoy more independence, allow them to work in fields that they otherwise would not be able to work in, and to improve their overall quality of life.

Alternative Financing Program (AFP): AFPs are part of The Alternative Financing Program, a discretionary grant, which falls in line with three other programs funded by the Rehabilitation Services Administration (RSA) under the Assistive Technology State Grant Program. "The Alternative Financing Program provides grants for the establishment and maintenance of programs that enable individuals with disabilities to purchase assistive technology devices and services through financial loans" (http://www.ed.gov/about/offices/list/osers/rsa/index.html, 15 June 2009). RSA falls under The Office of Special Education & Rehabilitative Services (OSERS), within The U.S. Department of Education.

Specifically, AFPs make low-interest loans with longer terms and lower monthly payments to eligible applicants (RSA-TAC-07-01). Further, the AFPs were also granted the authority to guarantee loans to people who are unable to qualify through traditional means (i.e., banks). Applicants for AT loans must use the proceeds to purchase assistive technologies. Likewise, applicants receiving funds for telework or self-employment must "make purchases that enable him or her to engage in telework as an employee or contractor or to become self-employed on a full-time or part-time basis" (RSA-TAC-07-01). One aspect of this authority that is of interest for this study is that a qualifying borrower must be able to repay the loan and meet the criteria established by the AFP for being creditworthy. Typically, a qualifying borrower must have a debt-to-income ratio of 50% or less and either have a good credit history, or only have credit problems directly related to their disability. Individuals with long-term credit problems, regardless of the cause, are rejected for loans (http://www.atlfa.org/).

RESNA: RESNA, although the legal name, stands for Rehabilitation Engineering & Assistive Technology Society of North America. RESNA is a not-for-profit corporation (501(c)(3) Under the Laws of the State of Illinois) and has a mission similar to OSERS (Office of Special Education & Rehabilitative Services). Specifically:

> Our purpose is to improve the potential of people with disabilities to achieve their goals through the use of technology. We serve that purpose by promoting research, development, education advocacy and provision of technology; and by supporting the people engaged in these activities. RESNA's membership ranges from rehabilitation professionals to consumers to students. All members are dedicated to promoting the exchange of ideas and information for the advancement of assistive technology (http://www.resna.org/about/index.php).

Understanding the relationship between RESNA, RSA and AFPs is fundamental to this study. AFPs are required to report program data and individual applicant data to the Alternative Financing Technical Assistance Project (AFTAP), which is operated by RESNA and funded by RSA under Title III of the Assistive Technology Act of 1998. AFTAP provides technical assistance to AFPs, which is one of four programs housed under the National Assistive Technology Technical Assistance Partnership (NATTAP), which is a grant funded by RSA. AFPs submit data to a web-based reporting system maintained through the University of Illinois (UIC) Occupational Therapy Department, under a subcontract with RESNA. The data collected in this study will go beyond what

AFPs currently report to RESNA, differentiating this study from others and creating a new wealth of information to contribute to the current body of literature.

Hierarchy of Relationships: See Figure 1 for hierarchical relationships between the many different programs and funding agencies discussed in this study.

Figure 1
Hierarchical Relationships between Programs and Funding Agencies

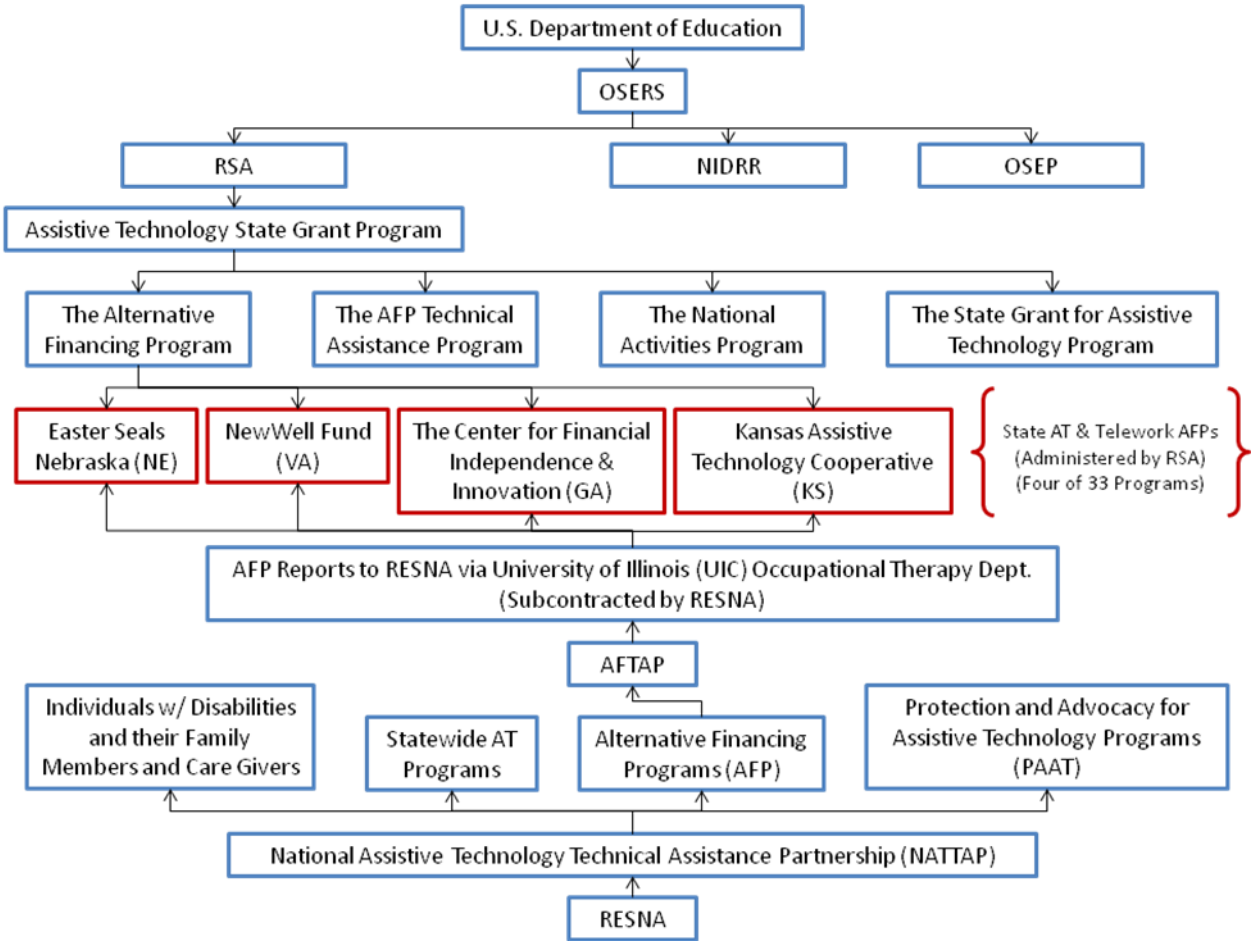


Figure 1. (OSERS) Office of Special Education & Rehabilitative Services. (RSA) Rehabilitation Services Administration. (NIDRR) National Institute on Disability and Rehabilitation Research. (OSEP) Office of Special Education Programs. (AFTAP) Alternative Financing Technical Assistance Project.

Research Questions

The driving research questions for this study are:

1. How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?
2. Have AFPs increased access to employment for persons with disabilities (PWD)?
3. Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?
4. What motivations do AFP applicants have for applying for AT/Telework loans?
5. How has telework affected AFP applicants?

The effectiveness of the AFPs and the Tech Act will be assessed and reported through the investigation and subsequent answering of these research questions.

Methodology

The terms 'descriptive' and 'observational' can be used interchangeably, and will be throughout this study. This study will undertake a quantitative approach to data analysis in order to assess the above research questions. AFP loan applicants will be sampled and then separated into two groups, those whose loan applications were accepted and those whose loans were declined. The survey tool asks a variety of demographic questions as well as goal oriented questions. The survey does not present the opportunity to divulge information about the person's disability, but does offer the opportunity to share whether their disability has hindered them from successful employment or

presented them with a poorer quality of life. Current employment, return to work and telework information is collected in such a manner as to delineate employment outcomes in terms of AFP loan assistance.

In order to validate the instrument, an expert panel will be enlisted to take the survey and then rate the questions giving feedback in terms of needed changes. Their responses and feedback will be utilized to correct and improve the survey tool only.

The data gathered from the survey will be analyzed statistically, or quantitatively. The analyses will include Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests, and Ordered Logistic Regression Modeling to investigate the research questions posited earlier in this chapter.

Summary

This chapter introduced assistive technology and its impact on individuals with disabilities in addition to quality of life, telework, the Tech Act and how Alternative Financing Programs enable persons with disabilities to obtain loans that potentially contribute to successful work outcomes for them. This chapter also covered the rationale behind the study of employment outcomes for persons with disabilities and the methodology that will be used in order to answer the proffered research questions.

The significance of this study is monumental in terms of discovering the motivations of AFP clients in applying for loans to obtain assistive technologies and/or monies to become self-employed or to telework. The key to successful employment outcomes for AFP clients is discovering which predictors define successful employment

for this population, then implementing those predictors. It is important that a connection be made between the motivations of AFP clients, predictors to successful employment, predictors of better quality of life, what role assistive technology has played in employment outcomes, and loan approval/rejection rates.

Finally, investigating the success of the Tech Act in light of employment outcomes and workforce integration for persons with disabilities will provide AFPs with the tools to further help their clients choose the best path for their success in the workforce and in their daily lives all the while helping them improve their quality of life.

CHAPTER II: Review of the Literature

Introduction & Overview of Related Areas

This chapter will present a review of the relevant literature, as well as overviews of the relevant issues in this study. It is important to critically examine literature on this subject, not only to provide a background explaining the general topics considered throughout the course of the study, but also to demonstrate how this study responds to and builds upon prior research, filling gaps in relevant knowledge. A thorough examination of the literature will ultimately demonstrate the compelling need for this research, which aims to provide a critical evaluation of the efficacy of the Tech Act with respect to increasing employment opportunities for individuals with disabilities. As well as employment outcomes, this review will examine the overall effectiveness of assistive technology, telework opportunities, AFP loan approval rates, and the motivations of AFP clients in light of self-reported quality of life.

First, this chapter will review the current literature on quality of life as it pertains to persons with disabilities. Next, opportunities and challenges for persons with disabilities with respect to employment in the United States will be considered. The research demonstrates that disability is a far-reaching phenomenon, but that recent social, scientific, and legislative progress has allowed individuals with disabilities to contribute to their communities and workplaces more effectively than at any point in history. Further, this chapter will present a discussion of assistive technologies. It will define the

term and provide numerous examples of important studies about assistive technologies. These studies will demonstrate ongoing debates surrounding the use of assistive technologies, as well as the various successes and failures of their use.

Following the discussion of assistive technologies, telework, or working from home, will be explored as a specific form of assistive technology as well as an alternative form of employment. An examination of relevant scholarly literature will demonstrate unique possibilities with respect to telework and a comparison of different venues of telework around the world. Noted will be their respective strengths and weaknesses, ultimately advocating a synthesis of these disparate approaches.

Quality of Life

Two aspects of the present study have been closely linked throughout the literature: disability and quality of life. While persons with disabilities in general have been shown to have, on average, a lower self-reported quality of life than persons who are not diagnosed with disabilities, within the population of persons with disabilities, a wide variety of quality of life scores have been reported (Kober & Eggleton, 2005). Given the work on the measurement and dimensionality of quality of life by Felce and Perry (1995), quantitative metrics have been utilized to determine the overall quality of life score of persons diagnosed with disabilities. This section will discuss the development of quality of life measures and the interaction of the quality of life of persons with disabilities with their independence, home, community, and their employment.

Quality of life examinations utilizing quantitative metrics began in earnest with the above mentioned work of Felce and Perry (1995). The authors developed a tool that could reliably be utilized to measure the quality of life of persons with disabilities across five important dimensions. Those dimensions are: physical wellbeing, material wellbeing, social wellbeing, emotional wellbeing, and development and activity. In their 1995 paper, Felce and Perry set forth a research agenda and confirmed that quality of life could not only be measured, but also affected (both positively and negatively) by the services made available to persons with disabilities (Felce & Perry, 2003).

Using both quantitative and qualitative methodologies, researchers have studied the impact of disabilities on home life and independence of individuals with disabilities. A broad qualitative study was undertaken in Bangladesh by Short, Vasey, & Tunceli (2005) finding that the disabilities of the participants had an overall negative impact on their homes, defined as their immediate dwelling and family life, and that their reported quality of life deteriorated as their disability hampered their independence (Short, Vasey & Tunceli, 2005). A quantitative study by Przewlocki et al. (2000) investigated the quality of life impact on the home and families of patients recovering from heart surgery. The authors found that the procedure, which increased independence and mobility, significantly increased the quality of life of both the self reporting patient and the patient's family (Przewlocki et al., 2000).

In addition to the independence of persons with disabilities, their quality of life as well as their home and community life, interactions between employment and quality of life have been reviewed. Short, Vasey, and Tunceli (2005), investigated the effect of

disabilities on the employment of individuals diagnosed with cancer and their quality of life. In their qualitative interview-based approach, the authors found that individuals who reported leaving work as a result of their disease had a lower quality of life than those at a similar stage of cancer who were able to continue working, either at home or at the office, through assistive services (Short, Vasey, & Tunceli, 2005). Benedict et al. (2009) studied the impact of disability and employment in multiple sclerosis patients and similarly found that there was a statistically significant relationship between quality of life and employment among patients after controlling for the stage of the disease. The authors' study provides further evidence of the positive benefit that employment has on quality of life controlling for a proxy for the severity of a given condition.

Martin-Arribas, De Andres Copa, and De La Paz (2005) undertook a comprehensive analytic technique on their sample of 292 people classified with a permanent disability. A structured interview was carried out to investigate the clinical aspects. The authors utilized the Nottingham Health Profile Questionnaire to assess quality of life and they carried out a univariate analysis to study the relationship between quality of life, disability, and depression. The authors also used a chi-square test to investigate inter-group comparisons as well as multivariate analyses using logistic regression (Martin-Arribas et al., 2005). The results of the study found that employment, which interacted with mobility, increased the likelihood of a higher quality of life.

Quality of life is an international issue as indicated by Hosain, Atkinson, and Underwood (2002). Study of the impact of disability on quality of life in a sample of individuals with disabilities in Bangladesh found that women with disabilities tended to

report a lower quality of life than men with disabilities, but also that employed individuals with disabilities reported a higher quality of life than those who were unemployed (Hosain, Atkinson, & Underwood, 2002). The following sections of this chapter will continue the discussion of persons with disabilities and this population's relationship with employment, assistive technologies, barriers and telework.

Workers with Disabilities

Albrecht, Seelman, and Bury (2001), in their comprehensive and exhaustive work, *Handbook of Disability Studies*, provided a compelling and instructive summation of the nature of disability and our relationship to it. They wrote:

> Disability is an enigma that we experience but do not necessarily understand. While some people are born with or experience disability as children, most of us become familiar with disability later in life. For the majority, then, what was once deemed as foreign, something outside of our bodies and experience frequently becomes an intimate part of our lives as we age. (p. 1)

Society has responded to this "enigma" with increasing acceptance and understanding, not only due to an increasing understanding that disability touches the lives of nearly everyone, but also due to advances in the study of disability, such as the illustrative offerings of Albrecht, Seelman, and Bury.

An ongoing critical challenge for individuals with disabilities in American society, and the one that this study primarily considers, is finding an effective means to employment. The primary front of this challenge is the workplace. In large part, normalcy

is measured by one's contribution to society, and individuals with disabilities have much to contribute.

The following section will describe the unique situation of working with a disability, discussing not only demographic information, but also the challenges faced in workplaces across the country and the triumphs made. Further, this section will describe the Tech Act, the evaluation of which is instrumental in this research.

Workforce Participation of Individuals with Disabilities

Zwerling et al. (2002) provided a study that focused on the demographic information of individuals with disabilities and their working habits. While this study should not be considered comprehensive, it provides a compelling introductory look at the qualities and identities of individuals with disabilities who work.

> Persons with disabilities who were more educated were more likely to be working. Married males were more likely to work than unmarried males (Odds Ratio (OR) 1.58). Blacks were less likely to work than whites (OR 0.56). Persons with disabilities related to cardiovascular disease (OR 0.23), musculoskeletal disease (OR 0.37) and respiratory disease (OR 0.23) were less likely to work than other Americans with disabilities. Among persons with psychiatric disorders, there was considerable variety in the propensity to work. Persons with schizophrenia (OR 0.24) and paranoid delusional disorder (OR 0.34) were markedly less likely to work; persons with bipolar disorder (OR 0.60) and major depression (OR 0.69) were also less likely to work. Lastly, persons with self-reported alcohol abuse (OR 1.30) were more likely to work and persons with self-reported

> drug abuse (OR 0.93) were not less likely to work than others in our study population of Americans with disabilities. (p. 358)

Zwerling et al. justified their research in part by noting, "workers with disabilities likely will represent an increasing portion of the American workforce" (p. 359). That reality also informs this research. The United States must respond to the need and the opportunities provided by individuals with disabilities contributing to the workforce, in large part by evaluating new programs and technologies that will assist individuals with disabilities and employers at large.

Zwerling et al. (2002) noted three major reasons why the percentage of individuals with disabilities contributing to the American workforce will continue to increase in the future:

> In decades to come, workers with disabilities likely will represent an increasing portion of the American workforce. This change in the workforce will be driven by many factors, among them: the aging of American workers and the impact of anti-discrimination laws such as the Americans with Disabilities Act (ADA) of 1990, and the impact of policy changes in the area of health care and welfare reform (e.g., The Workforce Investment Act of 1998 and the Ticket to Work and Work Incentives Act of 1999). (p. 359)

These social, demographic and economic changes to the American workforce and economy will create substantial changes not only for individuals with disabilities, but also individuals without disabilities and employers in general. Studies such as this one have far-reaching implications, and opportunities like teleworking could potentially have monumental effects on the economy at large.

Technology-Related Assistance for Individuals with Disabilities Act

The following brief section will detail the major aims of the Technology-Related Assistance for Individuals with Disabilities Act (the Tech Act). The purpose of the Tech Act is to ensure that persons with disabilities have a way to access and purchase assistive technology. To achieve this goal, the Tech Act provides four major programs: 1) State Grant Programs; 2) Alternative Financing Programs; 3) Protection and Advocacy for Assistive Technology programs; and 4) national Technical Assistance programs (Disability Policy Collaboration, 2004). The reason the Tech Act, and later the AT Act, focused on these programs is as follows:

> Many individuals with disabilities cannot access existing telecommunications and information technologies and are at risk of not being able to access developing technologies. The failure of Federal and State governments, hardware manufacturers, software designers, information systems managers, and telecommunications service providers to account for the specific needs of individuals with disabilities in the design, manufacture, and procurement of telecommunications and information technologies results in the exclusion of such individuals from the use of telecommunications and information technologies and results in unnecessary costs associated with the retrofitting of devices and product systems (the AT Act, 1998).

The next section will consider the challenges and barriers that individuals with disabilities have faced in the United States in previous decades with respect to employment.

Discrimination & Barriers to Employment for Individuals with Disabilities

Many studies have focused on the barriers to employment and discrimination faced by persons with disabilities in the workplace. These barriers stem from a number of sources. For instance, there may be economic barriers that may initially prevent a company from providing a suitable environment for workers with disabilities, or, specifically, providing the assistive technologies necessary to bridge the gap to employment for said individuals. There may be a social prejudice against those with disabilities from coworkers and employers. Further, the daily grind of working in an office may take a stronger toll on individuals with disabilities. Telework becomes an important issue in this climate, due to the numerous challenges that people with disabilities might face on a daily basis in the workplace.

The U.S. Department of Labor delineated the numerous barriers to employment faced by individuals with disabilities:

> These barriers include the fragmentation of existing employment services; the isolation and segregation of people with disabilities from mainstream programs and services; the lack of access to health insurance; the complexity of existing work incentives; the lack of control and choice in selection of providers and other agents; inadequate work opportunities resulting from attitudinal barriers based on historical and erroneous stereotypes; and the lack of accurate data on employment of people with disabilities needed to measure progress in eliminating barriers to their employment. (p. 1)

Due to the threat of these employment barriers against persons with disabilities, the government has passed laws that prevent discrimination for those who wish to work. Many academic studies have analyzed the success of these laws and the influence that they may have on the wellbeing of employees with disabilities, as well as the workplace in general. Though most studies have lauded pieces of legislation for their ostensible intent – to integrate individuals with disabilities into the workforce and protect their individual rights – researchers and commentators have also pointed to ongoing challenges that various forms of legislation have yet to combat or surmount, as well as unintended consequences caused by legislation.

In the wake of the passage of the Americans with Disabilities Act (ADA) of 1990, Schelly, Sample and Spencer (1992) analyzed the ADA by following the life of a man with a disability who sought employment. The authors of the study juxtaposed the aim of the act – "the full inclusion of persons with disabilities within their communities" (p. 457) – with the general difficulties experienced by employees with disabilities across the country. Schelly, Sample and Spencer ultimately cited numerous challenges, barriers, and subtle forms of discrimination that prevented this individual from successfully integrating into the workforce at large. Though the employee found employment rather quickly, the authors pointed to other barriers that prevented him from successfully integrating into his workplace and community in a timely fashion, which violated the spirit of the ADA.

McMahon, Rumrill et al. (2008) considered the characteristics of employers against whom allegations of hiring discrimination were filed between 1992 and 2005. They compared the characteristics of 19,527 employers that had closed allegations related

to hiring to the characteristics of 259,680 employers that had been accused of other types of discrimination. The study found:

> [H]iring allegations were more likely to be filed against employers with 15-100 employees, in the West U.S. Census track region, or in industries including educational services; public administration; transportation and warehousing; professional, scientific, and technical services; agriculture, forestry, fishing, and hunting; and construction. (p. 112)

Ultimately, the authors concluded that these employers needed more "outreach regarding ADA responsibilities" (p. 112). The study highlighted the fact that, despite much progress, employees and applicants with disabilities continued to face discrimination in the hiring practices of many U.S. organizations.

Generally, discrimination against individuals with disabilities seeking employment is not malicious in nature (Lemaire and Mallik, 2008). Rather, this discrimination stems from miscommunication and a lack of information with respect to assistive technologies and resources available to employers and employees. Despite noting the prevalence of discrimination, McMahon, Rumrill, et al. (2008) concluded their study on a hopeful note, suggesting that problems related to discrimination against individuals with disabilities could potentially be mitigated by increasing awareness and support for alternate modes of employment among employers at large, and facilitating outreach efforts by occupational health providers and employment specialists.

A study by McMahon, Hurley et al. (2008) continued to investigate the characteristics of employers who had been accused of discrimination against employees with disabilities. This study focused on the same group of employers and the same

allegations as the prior study. The study found that the U.S. Equal Employment Opportunity Commission (EEOC) accepted the validity of accusations related to hiring at a rate of 26%; it accepted the validity of 20.6% of non-hiring allegations. Further, it determined that employers "are less likely to settle claims of hiring discrimination without mediation, and less likely to accept the remedies recommended by the EEOC when hiring discrimination has been determined" (p. 106). These ancillary challenges are often overlooked, but continue to provide major difficulty for individuals with disabilities in the U.S. workforce.

The conclusions reached by McMahon, Hurley et al. (2008) are twofold. On one hand, the fact that the EEOC accepted accusations of hiring discrimination at a higher rate than accusations of non-hiring discrimination suggests that the ADA is being vigorously enforced with respect to hiring practices, which many assumed to be generally ignored in issues of discrimination against people with disabilities. However, the study also concludes that there needs to be further study of the factors that cause this discrimination, and there needs to be an effort to decrease the amount of discrimination against employees with disabilities in the workplace.

Indeed, many employees with disabilities continue to face numerous barriers. Lemaire and Mallik (2008) aimed to assist nurses who care for individuals with disabilities by citing specific barriers to employment. Nurses often play an important role in assisting and caring for those with disabilities. If they had a greater awareness of barriers to the employment for individuals with disabilities, then nurses could potentially

mitigate the effects of these barriers, or at least be more aware of the potential problems that their patients might face in the workplace.

In order to achieve this goal, the study considered 112 adults with disabilities and their respective barriers to consistent employment. The study found that "[I]nattention, interpersonal, and behavior problems (37.5%)" were frequent barriers to maintaining employment and that "[p]oor attendance, inadequate work quality, or interpersonal problems were responsible for 20.8% of involuntary employment terminations" (p. 147). Even if employees with disabilities did not face overt or malicious discrimination in the workplace, their respective conditions made consistent employment – in the traditional sense – a difficult and abiding challenge. Though the study concludes by citing the need for nurses to better understand these challenges and barriers in order to assist the psychosocial needs of their patients, the study also provides important information that would be beneficial to employers, policymakers, and employees with disabilities themselves.

Other studies have pointed to the continuing difficulty experienced by employees with disabilities, despite the use of assistive technologies in the workplace. Bolin (2007) points to a difficult decision that many employees with disabilities face. Most working-age individuals who have a disability want to seek consistent, gainful employment. However, employment precludes their ability to qualify for public health insurance. This often leads to inconsistent employment for individuals with disabilities, which generally disqualifies them from traditional health insurance benefits. Therefore, many employees with disabilities face a difficult choice, in both economic and psychological terms: either

continue employment (and subsequently risk losing public health insurance for the uncertain prospect of employee health benefits), or drop out of the labor market entirely.

Faced with this decision, coupled with other barriers and challenges, it is not surprising that many individuals with disabilities do not work (Wehman et al., 2008). Goldberg et al., (2008) examined individuals with psychiatric disabilities and found that only 35% reported consistent employment. Unemployment corresponded with the severity and number of disabilities. Ultimately, the study, like many others, suggests that there needs to be a concerted effort to "enhance existing models of supported employment programs with physical health and wellness promotion components." As the study contends, policymakers, employers and advocates of those with disabilities must continue to work on a suitable model of employment in order to increase the percentage of individuals with disabilities who are consistently employed.

Transportation & Infrastructure as a Barrier

Poor transportation and infrastructure continue to be barriers for individuals with disabilities who seek work, as well as employers who seek to hire from this population. Schelly, Sample and Spencer's (1992) study pointed to transportation as the primary barrier faced by employees with disabilities who wish to work. The authors noted that transportation is almost always necessary to achieving and maintaining gainful employment. However, employees with disabilities were often denied access to public transportation due to their disabilities, found the use of public transportation extremely

difficult due to their unique situation, or were located prohibitively far from a bus or train station, thereby preventing them from maintaining employment.

According to Schelly, Sample and Spencer's (1992) study, though Transition Services provided transportation "at great expense" (p. 457), this delayed the employee's transition into his workplace. The study begs the question of who should provide costly transportation services. Transportation is important with respect to teleworking – if transportation continues to be a barrier to employment for persons with disabilities, then telework may provide a suitable answer and a means to avoid difficulties with respect to transportation.

Employers, fortunately, seemed willing to facilitate the transition of employees with disabilities into the workplace. Since the 1990s, many employees with disabilities successfully integrated into the workplace, due both to legislative achievements (such as the ADA and the Ticket to Work Act (TTWA)) as well as improving social perceptions of employees with disabilities. Blanck and Pransky (1999) cited the strides made by employees with disabilities during the prior decade. They point to the traditional barriers to employment – "attitudinal discrimination by employers, lack of workplace accommodations, and inadequate job training" (p. 581) – but acknowledge that many of these barriers have already declined. They laud the efforts of employers to integrate employees with disabilities into the workplace, pointing to the fact that employers stand to "gain substantial economic benefit from their participation, without incurring burdensome expenses" (p. 581).

Assistive Technologies

Definitions of Assistive Technologies

In discussing technological responses to disability, Albrect, Seelman, and Bury (2001) wrote:

> Science has contributed to [a] transition in disability incidence, prevalence, and awareness by making life with serious and chronic impairments increasingly feasible. The result is that debates about technologies and medical ethics catch the public interest. (p. 1)

One major debate surrounds assistive technologies. The term assistive technology encompasses a broad range of devices that are aimed at assisting those individuals who have disabilities in whatever particular form needed (Kelker & Holt, 1997). The Individuals with Disabilities Education Act (IDEA) provides the following definition of an assistive technology: according to IDEA, assistive technology is "any item, piece of equipment, or product system... that is used to increase, maintain, or improve functional capabilities of individuals with disabilities" (Kelker & Holt, p. 2). This definition is both comprehensive and specific, and covers a broad range of devices – both high-tech and low-tech, expensive and inexpensive – that contribute to a higher quality of life for individuals with disabilities.

According to Inge (2006), the aforementioned definition is "the most frequently quoted definition of assistive technology" and "comes from the Technology-Related Assistance of Individuals with Disabilities Act of 1988, which was reauthorized in 1993, 1998, and most recently in 2004" (pp. 67-68). The Technology-Related Assistance of

Individuals with Disabilities Act eventually was revised, and redubbed as the Assistive Technology Act for the sake of brevity and clarity.

Assistive technology can help individuals with disabilities and workplaces connect in mutually beneficial arrangements. In this vein, Inge (2006) described assistive technologies in the following manner: "Assistive technology (AT) can assist in bridging the gap between a person's physical abilities and the job requirements. Many workplace challenges can either be overcome or ameliorated by using assistive technology in combination with other types of workplace supports" (p. 67). Assistive technologies have helped add to the vision of a world in which an individual's disability need not necessarily limit their contributions to their workplace, their community, and society at large.

Assistive Services

Assistive technologies can be used in the educational setting, in addition to the employment setting, to provide a variety of accommodations or adaptations for individuals who have disabilities. Often, a particular type of service accompanies the use of each type of assistive technology device. Specifically, the IDEA defines these accompanied assistive services as "any service that directly assists an individual with a disability in the selection, acquisition, or use of an assistive technology device" (Kelker & Holt, 1997, p. 2). The service can provide any number of the following activities or possibilities:

1. Evaluation of the technological needs of an individual including a functional evaluation in the individual's customary environment.
2. Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices for individuals with disabilities.
3. Selecting, designing, fitting, customizing, adapting, applying, maintaining, repairing, or replacing assistive technology devices.
4. Coordinating and using other therapies, interventions, or services with assistive technology devices, such as those associated with existing education and rehabilitation plans and programs.
5. Assistive technology training or technical assistance with assistive technology for an individual with a disability or the family of said individual.
6. Training or technical assistance for professionals, employers, or other individuals who provide services to, employ, or otherwise are substantially involved in the major life functions of individuals with disabilities. (Kelker & Holt, 1997).

Of these six listed services, this study will concentrate on the second general service, defined by the IDEA as outlined in Kelker and Holt (1997): "Purchasing, leasing, or otherwise providing for the acquisition of assistive technology devices for individuals with disabilities" (p. 2). Within this general category, the type of assistive technology utilized by the applicant could range from any one of nine general categories. These categories are as follows:

1. Positioning – Therapists try to position the individual in an upright, forward facing position with the use of a structured chairs or straps. Examples of equipment used for this purpose are side lying frames, walkers, crawling assists, floor sitters, chair inserts, wheelchairs, trays, and standing aids.
2. Access – This category of devices allow the individual to access devices or physical entrances of buildings or facilities. The former can include using anatomical sites to link devices to computers or switches. The latter include ramps and door openers to allow entrance.
3. Environmental Control – Remote control switches, robotic arms and other items or technologies that turn lights on and off or open doors are included in this category.
4. Augmentative Communication – Some individuals with disabilities have difficulty communicating and this can be detrimental to employment. Assistive technologies can implement communicative devices such as communication boards, electronic communication devices, speech synthesizers and recorded speech devices.
5. Visual Aids – Visual impairment assistance can include devices such as screen readers, screen enlargers, magnifiers, or even large type books, taped books, or braillers.
6. Mobility – Individuals whose physical impairments limit their mobility may require any number of devices that can assist in their movement. These

devices can include self-propelled walkers, manual or powered wheelchairs, or powered recreational vehicles like bikes and scooters.

7. Computer-Based Instruction – This category can make possible independent participation in employment activities. Software can be selected which matches the conceptual framework of the regular curriculum yet offers an alternative way of responding to exercises and learning activities.
8. Social Interaction – Working in an office may require a large degree of social interaction. Assistive technology can help individuals with disabilities participate in a number of activities including computer simulations.
9. Self Care – Self care is critical for non-teleworking individuals with disabilities. They must be able to dress themselves, feed themselves and utilize restroom facilities by themselves. Assistive technologies for these tasks include robotics, electric feeders, adapted utensils, specially designed toilet seats, tooth brushing and other cosmetic aids.

Major Types of Assistive Technologies

Inge (2006) described two general types of assistive technologies – high technology and low technology, "depending on the complexity of the devices, and the materials used to produce them" (p. 68). First, low technology solutions will be considered. According to Inge, "low technology devices usually are inexpensive and easy to purchase or make" (p. 68). Inge further explained:

> Materials to fabricate a low-tech solution can be found at many generic merchandise stores (e.g., hardware, home improvement, or computer stores) or ordered from catalogues. The cost will typically be less from these sources than if purchased through specialized vendors. Modifying purchased items can also produce low-tech solutions. Low-tech does not necessarily require specialized training to identify or make and relatively easy to implement for individuals with disabilities. (p. 68)

As an example of a low-technology type of assistive technology, Inge cites a stapler that is mounted on a base that will allow individuals with the use of only one hand to use the device.

Low technology forms of assistive technology generally have less controversy or debates surrounding their usage due to their low cost and ease of implementation in schools and workplaces. Indeed, their ease of design and implementation are one of their most appealing qualities for both employers and employees with disabilities. Inge (2006) describes a few simple low-technology items that can significantly improve contribution to work. She writes:

> An example [of a low-tech assistive device] might be extending the legs on a table so that the person who uses a power chair can access a computer workstation. Another example might be purchasing a typing stand to make it easier to manage data entry tasks. (p. 69)

These simple solutions do not require much funding, nor legislative intervention. Further, they are unlikely to affect the comfort or work style of other individuals in the office. Inge further emphasizes the fact that low-technology solutions are not only inexpensive, but can be designed by "a carpenter, a 'handy' parent or friend, church volunteer, or

perhaps the local high school's vocational tech department" (p. 69). Though some low-tech solutions might require the input of a professional, most are very simple and require little investment, in both time and money.

In contrast, high-technology forms of assistive technology are often expensive, complicated, and generally require input from specialists and training to use, for both the individual with a disability and employers. Inge (2006) described high-technology forms of assistive technology in the following manner:

> High technology devices are characterized by the use of electronics, special manufacturing techniques, and materials. Typically, high technology is obtained through specialized vendors and requires assistive technology services such as a rehabilitation engineer, rehabilitation counselor, occupational, physical, or speech therapist to acquire and put into place for the individual who requires the accommodation. (p. 68)

The high cost, complexity and specialization of high-technology forms of assistive technology have induced ongoing debates and concerns. Both individuals with disabilities and employers may feel like they are unable to afford new forms of assistive technology. Indeed, cost continues to be a major issue with high-tech forms of assistive technology. According to Smith (1998), though "[d]emand for [assistive technology] is increasing rapidly in response to exciting recent technological improvements…many assistive devices are expensive and are impossible dreams for individuals who do not have the benefit of full or partial subsidy by a third-party funding source" (p. 115).

Fortunately, for many individuals with disabilities seeking more expensive forms of assistive technology, many observers have recognized the need to assist workers with

disabilities in obtaining these high-tech devices. Assistance has come from both private and public sources. According to Smith (1998):

> The federal government has recognized the vital role of third-party funders in the [assistive technology] marketplace and has attempted to provide information and advocacy services to potential [assistive technology] users to assist them in obtaining private and public resources. (p. 115)

Smith further notes that public and private attorneys have been a tremendous asset to individuals with disabilities who need high-tech forms of assistive technology to successfully seek employment.

Fortunately, high-tech solutions are less common than low-tech solutions. According to Inge, "71% of accommodations cost $500 or less with 20% costing nothing. As an example, simply rearranging the environment may make a workplace accessible and cost nothing." (p. 70). However, misinformation continues to exist around all forms of assistive technology, and many employers and employees – both those with disabilities and without disabilities – continue to think that all forms of assistive technology are prohibitively expensive (Inge 2006).

Due to this reality, many observers continue to question and debate the impact of assistive technology devices on workplaces and schools. They cite the arguably prohibitively expensive costs of high-technology solutions, and question whether other employment arrangements would be more effective and efficient. Further, many stakeholders have debated the question of who should bear the burden of the sometimes expensive costs of assistive technologies; whether the workplace or the individual should pay, or whether private sources or public funds should pay for high-tech forms of

assistive technologies. These concerns and debates have weighed on the minds of employers and workers, both those with disabilities and those without disabilities. De Jonge, Rodger, and Fitzgibbon (2001), through a qualitative study of workers with disabilities and their coworkers cited the following themes as being the most important to workers:

> …software compatibility, information technology and product support, and the interaction between technology and the work environment. Participants also reported on the impact of technology on their performance and comfort at work, as well as dealing with people and processes in the workplace. (p. 1051)

The researchers argued that identifying and responding to these issues would help surmount discrimination and misinformation about assistive technologies in the workplace, and "ensure that the spirit of disability discrimination legislation is realized" (p. 1051).

Ultimately, the type, cost and nature of assistive technologies has produced unique policy implications, debates, and questions, many of which will be considered later in this chapter. Specifically, this literature review will consider such debates with respect to telework, one unique manner by which individuals with disabilities have integrated themselves with the workforce at large. However, all types of assistive technology are bound by their aim to improve the lives and livelihoods of individuals with disabilities. Such technologies are widely regarded and noted for their valuable ability to more effectively integrate individuals with disabilities into public spaces, schools, and workplaces across the country.

The following section will consider a number of studies that have analyzed the use of assistive technologies for individuals with disabilities in the workplace, and the general integration of workers with disabilities into workplaces across the country, noting ongoing issues surrounding assistive technologies, questions over responsibility for costs and implementation, and developing a process to identify an individual's unique needs with respect to assistive technologies.

Legislation & Funding Supporting Assistive Technologies

Since the late 1980s, there have been numerous laws passed and sources of funding that have supported the growth and spread of assistive technologies. The first law that focused specifically on the usage of assistive technology was the Technology-Related Assistance for Individuals With Disabilities Act of 1988, also known as the "Tech Act," passed in 1988 (Noble, 2002). The purpose of this act was to provide adequate funding to states to develop assistive technology programs. According to Noble, the Tech Act had numerous goals:

> These Tech Act programs were required to provide information about devices, services, legal rights and remedies; train people to locate and access funding sources for assistive technology; provide advocacy services and legal representation when assistive technology was inappropriately denied; and engage in legislative advocacy to ensure systemic changes in laws, regulations, policies and practices to enhance assistive technology rights. Additionally, states were expected to support the objectives of their Tech Act programs with "systems change and advocacy activities." (p. 1)

All of these components were critical for the spread of assistive technology to homes, schools, and offices across the country. Further, the Tech Act was revolutionary for covering all disabilities and all ages. The Tech Act also delineated a specific program of funding, where each state received $500,000 per year. According to Noble (2002), "Programs were administered by the National Institute on Disability and Rehabilitation Research (NIDRR) within the Office of Special Education and Rehabilitative Services (OSERS) of the US Department of Education" (p. 1).

The Tech Act was reauthorized in 1994, with the funding scheme slightly changed (Noble, 2002). However, the revised Act further pushed for "major systemic change" (p. 1). Unfortunately, many states fell short of the Tech Act's numerous goals (Noble, 2002). Congress later repealed the Tech Act, replacing it with the Assistive Technology Act of 1998, known colloquially as the AT Act. The goals of the AT Act included:

> …providing sufficient resources to pay for AT devices and services; providing personnel trained in AT; disseminating information about the availability and benefits of AT; and altering systems to ensure that consumers were getting the AT devices and services they needed when they needed them. (p. 2)

Observers note that states have fallen short of the sweeping reforms articulated by the AT Act, largely due to a gradual reduction of federal funding (Noble, 2002). Federal funding for the AT Act has left some states in the cold, which have, in response, implemented their own AT legislative and funding initiatives. The AFP represents one such program.

Under the auspices of the Assistive Technology Act, AFPs received federal grants for the first time in fiscal year 2000. These federal grants established or expanded AFPs which are now 33 strong in states and territories across the U.S. From 2000 to 2004, the AFPs were administered by the National Institute on Disability and Rehabilitation Research located in OSERS. In December 2004, the Rehabilitation Services Administration (RSA), also located in OSERS, took over the administration of the AFPs. Since federal funding was established, data have been collected including program data as well as individual applicant data. Congress appropriated funds, in fiscal year 2002, to support grants to increase access to telework for individuals with disabilities. Using this funding, the RSA created the Access to Telework Program (Telework) (under section 303(b) of the Rehabilitation Act of 1973, as amended (Rehab Act)). The Telework program aims to increase access to assistive technologies for persons with disabilities as well as increase employment opportunities and competitive employment outcomes. These goals are outlined by RSA (2007) as follows:

> To achieve these goals, RSA provided Telework grants to states. These Telework grantees maintain permanent programs that provide loans to individuals with disabilities to allow them to purchase computers and other equipment so that they can work as an employee or contractor or to become self-employed on a full-time or part-time basis from home or other remote sites. The loans are provided through alternative financing mechanisms such as: low-interest loan funds; interest buy-down programs; revolving loan funds; loan guarantee or insurance programs; programs operated by a partnership among private entities for the purchase, lease, or other acquisition of computers and other equipment, including adaptive equipment; or other mechanisms that meet the

> requirements and intent of this program and that are approved by the Secretary. (RSA-TAC-07-01)

Telework loans can be used to purchase assistive technologies that will enable the borrower to engage in telework in order to reduce barriers to employment. To this end, AFPs issue Telework loans that encompass these purchases. AFPs also issue AT loans, not to be confused with Telework loans. The definition of telework for this study, then becomes any work that "reduces or eliminates barriers to employment such as inadequate transportation, fatigue, inaccessible work environments, and the need for personal assistance experience by individuals with disabilities" (RSA, 2007). The difference for an AT loan would be the purchase of assistive technologies to enhance daily life, community integration, or to enhance one's working environment or ability to be employed, all of which enhance quality of life. The difference in AT loans and Telework loans is almost negligible and an effort will be made to collect data that will elucidate these minute differences.

Issues Surrounding Assistive Technologies

Several studies have examined and elucidated the benefits of employing assistive technologies in the workplace. They have looked at the issue of assisting workers with disabilities in a number of different ways, examining the legal, social, technological and economic ramifications of employing assistive technologies in the workplace (Inge, 2006) (Langton & Ramseur, 2001). The literature reviewed has pointed to both the pros and the cons of assistive technology in the workplace and has considered the issue of

assistive technologies from the perspective of employers and employees, both those with disabilities and those without disabilities.

As noted, many employers have the misperception that they will be entirely financially responsible for the purchase and maintenance of assistive technologies in the workplace. According to Inge (2006), funding may be available and costs are generally reasonable and equitable. Inge explained:

> Small businesses with 15 or fewer employees are not required to pay for accommodations under the Americans with Disabilities Act. Companies with more than 15 employees may be required to provide and pay for a reasonable accommodation to a qualified applicant or worker unless undue hardship would result. (p. 70)

Reasonable accommodations as described by the Americans with Disabilities Act (2000):

1. making the workplace accessible;
2. restructuring a job to best use a person's skills;
3. modified work schedules;
4. modifying equipment;
5. adjusting training materials or policies; and
6. providing qualified readers or interpreters.

Ultimately, Inge discovered that most employers work in a collaborative fashion with workers with disabilities to find suitable accommodations that meet the needs of all parties involved.

Apart from the issue of cost, knowing how to implement assistive technologies in the workplace and what types of technologies are needed are other important issues that

employers and employees must consider. Langton and Ramseur (2001) argued that employers and employees should collaboratively embark upon a technology assessment process that will identify needed types of assistive technology and seek low-cost and low-technology alternatives that would benefit all parties involved. The researchers explained:

> A well-developed technology assessment process can be instrumental in assuring that each step is considered and properly carried out. This process is most effective when the consumer is at the focal point of the assessment that includes a thorough job analysis of the essential functions of the job as well as an understanding of the functional capacities of the potential employee. Opportunities often exist for low cost, off-the-shelf products which help to increase the availability of needed resources, lower overall costs, and improve maintenance, repair and replacement options. (p. 27)

In this process, effective and honest communication between employer and employee is paramount. Both parties must understand the employee's unique needs in order for the implementation of assistive technology to be effective.

However, when the issue of assistive technology becomes excessively complicated or confusing for employers and employees, or up to subjective interpretation or conflict, then the situation inevitably proves to be a challenge for employers and employees alike. Often, these specific considerations fall outside the ability of employers and employees to resolve. As a result, outside help often will be needed to resolve disagreements and misunderstandings (Inge, 2006).

The process of evaluating one's assistive technology needs should be ongoing. Inge (2006) argued that instead of relying on an employer and employee to develop ad hoc assistive technology solutions, individuals with disabilities should devise a personal

assistive technology plan prior to seeking employment, based on their unique skills, interests and needs. Inge explained:

> Attempting to determine a person's technology needs prior to knowing the person's interests can result in the purchase of assistive technology or skill training in the use of a device that does not translate to a competitive employment position. In addition, it may be difficult, if not impossible, to identify assistive technology devices without knowing what the person wants to do. (p. 68)

Inge continued to outline the challenges that individuals with disabilities and employers often must face with respect to assistive technologies. In many cases, somewhat ironically, the use of assistive technologies can potentially hinder the ability of a person with a disability to become employed and become fully integrated with the labor force and society at large. To argue this point, she wrote:

> Requiring that technology be identified and purchased prior to the job search may delay access to the community. An individual may learn to use an assistive technology device as a prerequisite to employment that is not compatible with the negotiated job duties… An evaluation of the person's needs for [a particular position] had to occur, and an individualized program developed to facilitate employment. (p. 68)

As noted earlier in this chapter, one of the Tech Act's goals is to ensure that persons with disabilities are able to access assistive technology, as technology plays an important role in business and work. When evaluating assistive technology solutions, this goal must be kept in mind. If assistive technology runs counter to legislation aimed at promoting

opportunities for individuals with disabilities, then the purpose and design of assistive technology programs should be reevaluated.

Indeed, the unique technological needs of individuals with disabilities often create difficulties for both individuals and employers. For example, Inge (2006) cited one individual with a disability who, prior to employment, trained using a specialized software program that allowed him to use a specialized keyboard in spite of his disability. However, the program was not compatible with his eventual employer's computer system.

In response to these potential problems, Inge (2006) argued, "the identification of assistive devices prior to employment should be considered if the device increases the person's functional capacity *in any environment*" (p. 68). Indeed, forcing an individual with a disability to learn how to use a particular assistive technology as a prerequisite for a position runs contrary to the primary purpose of assistive technology. In this vein, Inge continued:

> … the purchase of AT should match a functional need that an individual has rather than requiring that devices be identified as a prerequisite to employment… Obviously, increased independence is a goal and should be facilitated for any task or activity and within any environment in which the person lives, works, and plays. However, requiring that a person learn to use assistive technology as a prerequisite to a job search is contrary to the concept of customizing and negotiating a job based on the individual's skills and interests. (p. 68)

As Inge underscored, assistive technologies should be designed and implemented with the purpose of increasing the independence and choices enjoyed by individuals with disabilities with respect to employment, rather than reducing and limiting those choices.

Occupational Health Providers and Employment Specialists

Due to these unique issues that employers often face with regard to providing assistive technology to individuals with disabilities seeking employment, many employers have turned to occupational health providers to provide advice about workplace accommodations and assistive technologies. The authors argue that occupational health providers are essential in the process of integrating employees with disabilities into the workplace, but lamented the fact that there was a dearth of academic studies analyzing "occupational abilities and risks associated with specific abilities" (Blanck and Pransky, 1999, p. 581).

However, despite the growing efforts of employers and occupational health providers to make their workplaces suitable for employees with disabilities, many employees with disabilities have faced – and continue to face – fundamental challenges with respect to transportation and other barriers. Further, many employees with disabilities continued to face discrimination, in one form or another.

Reconceptualizing Disability & Future Challenges

While much of this section has focused on finding concrete solutions to challenges and barriers experienced by individuals with disabilities who want to contribute to the workforce, it is also important to recognize competing conceptions of disability and its role in society. With respect to employment, this chapter has primarily considered disability as a physical or mental condition that produces challenges that need to be surmounted.

In contrast, some researchers, such as Barnes (1999), have argued that "perceptions of impairment and disability are inextricably linked to the 'mode of production' or the social organization of work" (p. 7). Braddock and Parish (2003) highlight this perspective as well:

> Throughout Western history, disability has existed at the intersection between the particular demands of a given impairment, society's interpretation of that impairment, and the larger political and economic context of disability… Disability exists as it is situated within the larger social context, while impairment is a biological condition. (p. 11)

Society's general perspective toward disability is a function of its values and order, its transient social and economic mindset. Disability and impairment have the same relationship as weight and mass. While the former is subjective to the particular environment, the latter is concrete and objective. This viewpoint implicitly suggests that a fundamental revision of our economic priorities and structure could potentially embrace individuals with disabilities more than its current incarnation.

Barnes (1999) argues this exact point. He explained the prevailing conceptual relationship between work and disability, citing a social model as a more progressive way to conceptualize work and disability, as well as their apparent conflict. Though the excerpt below is extensive, it effectively summarizes and elucidates a conceptual view of disability, employment, and society that must be acknowledged in this work. He explained:

> …there are several important points to be made about a social model analysis of work. One, it does not automatically mean that individually based interventions, whether they be medically, re/habilitative, educational or employment based, are of no value or always counter-productive. Two, it signifies a concerted attempt to shift attention away from the real or imagined functional limitations of individuals with perceived impairments and onto the difficulties caused by disabling environments both physical and social. Three, it rejects the notion that unemployment and underemployment among disabled workers can be understood in isolation from other factors such as education, transport, the built environment, access, ideology and culture. Finally, it recognizes that within the present context, policy developments in the employment field can have only a limited impact on the employment problems of disabled persons and that, as a consequence, meaningful change is only likely through a radical reformulation of the meaning of and the organization of work. (p. 7)

To distill Barnes' argument, the nature of the system of work inherently creates a false dichotomy between having a disability and not having a disability. Ultimately, Barnes argues that policy measures that aim to help those with disabilities find employment, while helpful in integrating individuals with disabilities into the workforce at large, tend

to miss the overall point. Work, by its nature, creates two classes of individuals – those who can and those who cannot. The infrastructural system that surrounds the Western labor market further perpetuates this false dichotomy.

To illustrate this point, an industrialized labor market inevitably puts those with physical disabilities at a disadvantage, as their particular physical "inability" prevents them from meeting the needs of the labor market. However, the economies of the United States and most developed nations now are largely considered post-industrial. In this particular labor market, those with physical disabilities are likely at less of a disadvantage, due to the increasing value of mental rather than physical labor as well as the use of computers and technology in the workplace (Hollier & Murray, 2004).

However, Barnes (1999) noted that the current information technology age has the potential to be both enabling and disabling, for both those with disabilities and those without disabilities. Dobransky and Hargittai (2006) echoed this point, writing:

> While Internet use offers a wealth of information and interaction that those with disabilities would otherwise have a difficult time accessing and thus can lead to improvements in both physical and mental-health outcomes, these benefits are not available to many people with disabilities, and may in fact reinforce the unequal status of people with disabilities in society. (pp. 314-315).

Their study argues that there exists a general digital divide for individuals with disabilities, though this divide can vary for specific types of disabilities.

Hollier and Murray (2004) continued to emphasize the dual nature of the digital revolution in the United States. While new opportunities presented themselves for

individuals with disabilities, new challenges and barriers also emerged concurrently. They argued:

> The 1970s and 1980s saw a rapid take-up in the use of personal computers. During the same time period, society began to move towards providing equity for people with disabilities. As legislators around the world created new disability and Information Technology policies, more people with disabilities were given access to education and the evolving computing tools provided unprecedented educational opportunities. (p. 1571)

According to the authors, these new technological opportunities helped a wide variety of individuals with disabilities, with innovations such as electronic text and voice synthesizers. Further, the delivery of electronic media on a personal computer also helped individuals who have vision or hearing impairments, as well as those who have issues related to mobility, integrate more effectively, as well as enjoy new opportunities in economic, educational, and social terms. They argued that new technological innovations "led to a closer equality between the educational services of the able-bodied and people with disabilities" (p. 1571).

However, this new digital technology also presented challenges, as well. Hollier and Murray (2004) explained:

> Unfortunately this evolution is not without notable difficulties: issues surrounding the cost of products, the lack of support from large corporations and choice of platform resulted in substantial difficulties for educators in the assessment of appropriate technology…Although it is clear that the evolution of the personal computer has had a significant

> impact on the provision of education for people with disabilities…innovation is [often] prioritized above e-inclusion. (p. 1571)

It should be noted that the digital revolution has produced mixed results for workers as a whole – not just individuals with disabilities. The economy's transition from industrial to information-technological has produced profound implications for the country at large. Some aspects of this transition have benefitted people with disabilities; other aspects have not.

Though Dobransky and Hargittai (2006) argued the importance of approaching the digital divide with a nuanced view, their study clearly demonstrates that despite the great progress made in integrating individuals with disabilities into the workforce during the technological post-industrial age, the nature of the United States' current economic system and the values that inform it continue to serve as a fundamental challenge and barrier for people with disabilities seeking work. Indeed, instead of focusing on the disability as the source of the challenge, researchers should focus instead upon the labor market and economy, and how these social structures are ill-suited to meet the needs of individuals with disabilities.

Barnes (1999) noted that there are specific principles that currently inform notions of work in the United States that, at their core, tend to exclude those with disabilities. To combat this fundamental problem, he argued that a work system based on alternative principles could promote the inclusion of individuals with disabilities and reduce the barriers that they face, rather than exclude these individuals due to their perceived disabilities. Barnes (1999) argued:

> .... [in] much of western society since at least the eighteenth century, the meaning of work has been organized around a particular set of values and principles; namely, the pursuit and maximization of profit, waged labour, and competition between individual working…[But] when work is organized around a different set of principles such as social necessity, obligation and interdependence, for example, people with accredited impairments can be included in rather than excluded from the workplace. It is notable to recall here that during the 1939/45 conflict nearly half a million hitherto 'disabled' workers were drafted into the labour force at various levels in aid of the war effort. (p. 8)

This study acknowledges this conceptual viewpoint and is sympathetic to it. However, this study fundamentally responds to the current specific needs and challenges of individuals with disabilities, and the concrete means to surmount these barriers by evaluating telework. By specifically focusing on telework, this study implicitly responds to the current structure of the labor market, rather than an idealized system of employment.

It should be noted that the economic systems in countries around the world will continue to develop in the coming decades, and research, as well as policy decisions, should focus on developing an economic system that suits the needs of all individuals, irrespective of disability. Further, policymakers should seek to prioritize employment and telecommuting qualities that emphasize inclusion rather than exclusion, and collaboration rather than competition. These tenets will likely help all employees – not just those who have disabilities. Ultimately, this study focuses on concrete solutions for the current economic and labor climate, as well as the specific barriers that individuals with

disabilities currently face. As a result, the social model of analysis of work, as articulated by Barnes (1999), is only ancillary to this study and its objectives.

Though progress has been made in the form of legislation and continued efforts by health care providers and employers, there needs to be a continued effort to find new suitable models to provide those with disabilities with employment opportunities in the face of abiding barriers and difficulties. These barriers are numerous. They range from physical barriers in the workplace, prejudice from employers and fellow employees, difficulty of commuting, and issues related to health insurance. In many cases, the application of assistive technologies may not constitute the best means to provide suitable employment opportunities for those with disabilities.

Teleworking constitutes one of the most promising and innovative methods of providing employment opportunities to individuals with disabilities, as well as other individuals who may desire to work remotely because it avoids issues related to travel and office space. Teleworking will be discussed as it relates to this study – its benefits, potential problems, and promise.

Teleworking

The Americans with Disabilities Act does not mandate that all employers must provide telework programs to every employee. However, if an employer does offer a telework program, then the employer must allow employees with disabilities equal opportunities to participate in such a program. The obligation of 'reasonable

accommodation' may require an employer to waive certain eligibility requirements or otherwise modify their telework program for someone with a disability who needs to work at home (EEOC, 2002).

Baker and Fairchild (2005) implicitly provided the justification for this research, writing:

> Currently, claims and assumptions regarding teleworkers with disabilities are created by overlaying research on teleworking and research on employees with disabilities. Without research specific to teleworkers with disabilities, the assumptions and claims made regarding teleworkers and, more specifically, persons with disabilities, will continue to encourage speculations interfering with telework as a viable reasonable accommodation that can increase the employment of persons with disabilities. (pp. 42-43)

Some of the research described in the following section focuses primarily on teleworking. Some research, described earlier in this chapter, specifically focuses on the unique needs of workers with disabilities. A few studies focus primarily on the relationship – or the "overlay," as Baker and Fairchild describe it – between workers with disabilities and teleworking. These studies will receive added emphasis.

It is important for researchers, and subsequently policymakers and analysts, to acknowledge that research specifically about teleworking might not necessarily respond to the unique needs of workers with disabilities. Similarly, research on workers with disabilities might not necessarily speak to the viability of a particular teleworking program. Readers of this study should be aware of this distinction.

Ultimately, if policymakers and employers desire to create a system of teleworking that specifically responds to the needs of individuals with disabilities, it is important for stakeholders to refer to research that specifically responds to the relationship between telework and workers with disabilities. This study, in particular, aims to fill that need. However, it is important to study the nature of teleworking on its own merits, before considering its implications upon the employment opportunities of individuals with disabilities seeking alternative forms of employment.

A study of telework implementation at Hewlett-Packard (Washington State University Cooperative Extension Energy Program, 1999) reported that the setup cost could potentially range from no cost to more than $5000 per teleworker. This wide range in cost suggests the wide variety of employment opportunities in the United States. Indeed, some forms of employment respond more effectively to telework than others. In a great number of employment situations, however, $30 per month toward remote network access may be all that is required to make an employee's laptop fully functional for usage in a telework system (Washington State University Cooperative Extension Energy Program).

Employers tend to focus on the costs and other potential economic drawbacks of teleworking programs, but there are many benefits to implementing and providing a telework program (Hursh & Lui, 2003). Hursh and Lui (2003) argue that proponents of telework should frame their argument for telework programs in terms that would most appeal to employers. Specifically, they should argue that telework will increase production and efficiency and, as a result, profitability. According to Hursh and Lui:

> Professionals in disability management, rehabilitation, and related fields must underscore the profitability connection when dealing with and offering services to business. The message that must be communicated is that effective disability management can reduce costs, return employees to work, retain more workers on the job, and improve productivity. (p. 47)

The study concludes that, "the case for disability management, which is defined as employees leaving work as the result of a disabling injury or illness, is made at the company's bottom line. Disability management, reducing employee absences, and efforts to improve the performance of employees on the job are all productivity-related." (p. 53). As a result, proponents of telework and providing employment opportunities for those with disabilities should emphasize the potential of telework to reduce bottom lines and increase productivity, as well as widen the scope for potential employees who otherwise might have not sought employment.

There are other less concrete benefits that employers experience by providing telework to employees with disabilities. For example, providing technologies to employees with disabilities can help raise the technology standard of the entire company, as well as give the employer a 'greater sphere of influence' by having employees with connections to people in various geographical areas (Oregon Department of Energy, 2004).

Hursh and Lui (2003) contend that telework represents the ability to respond to global economic pressures. For some companies, telework might not represent an immediate gain in productivity or profits, but it universally represents the company's

willingness and ability to "develop and preserve a competitive edge, which is vital in today's challenging business and economic environment" (p. 47).

Telework provides alternative routes for enabling more individuals with disabilities to enter the workforce or to increase their level of involvement and earnings. Telecommuting also provides an important opportunity for employees with disabilities to continue working for a company without being in a work environment that is not as conducive to the nature of the disability as the home environment. As an increasing number of people telecommute, organizations limit the risk of losing the knowledge capital, abilities, and skills of the employee when other life situations necessitate a move from the area.

Telecommuting can also help the worker and the employer to mitigate the effects of his or her disability, particularly if the disability is work-related. For example, for many individuals who develop environmental illnesses or sensitivities, episodic symptoms, hospitalizations, and employer/co-worker fears typically contribute to poor employment histories. For those with mobility impairments, typical contributing factors include lack of affordable and reliable transportation, limited accessibility of the businesses, and lack of personal assistance services in the workplace. For chronic fatigue or pain, a common barrier is that employers may be unwilling or unable to accommodate the need for extended rest periods, alternative scheduling, or the reallocation of work duties (West et al., 2005).

For persons who experience chronic or changing disabilities, telecommuting options may be excellent solutions to not only find employment, but also remain

employed because of enhanced personal control (Hesse, 1995). As disability symptoms fluctuate, these individuals can better preserve their stamina and remain a healthier and more reliable employee. By eliminating daily commutes and reducing fatigue issues, telecommuting also helps them to maintain their productivity and may serve as a long-term job retention strategy.

However, these benefits have to be weighed by the individual with a disability against the potential undesirable effects of telework. Feelings of isolation may lead to perceptions of alienation and diminished attitudes toward organizational attachment, which in turn could affect an employee's motivation, job satisfaction, and commitment (West et al., 2005).

Working from home benefits those with certain types of disabilities, particularly quadriplegia and mental illness (Mook, 2003), but not for others, such as those with traumatic brain injury (Oregon Department of Energy, 2004). These factors may ultimately affect teleworker-supervisor relations, co-worker communication, and the firm overall (Allen & Renn, 2002). In addition, home-based employment works best for people who have their social and recreational needs met in venues other than the work environment (Rumrill, Fraser, & Anderson, 2000).

Telework has its share of critics due to these potential problems. Baker and Fairchild (2005) point out the numerous arguments proffered by critics of telework programs:

> Critics have generally focused on two features of telework: the remote aspect of telework – the lack of work support, job structure, technology, social interaction and communication, and also the potential liabilities of

> telework. Concerns have also been expressed about the costs associated with setting up teleworkers – for example, equipment and remote communication access, and determining who pays for what aspects of the telework ICT infrastructure. (p. 35)

Though many of these concerns may at first appear valid, effectively run telework programs have avoided most, if not all, of these potential pitfalls. In fact, according to Baker and Fairchild, "Other than security, which is an ongoing issue generally, these concerns are relatively unfounded" (p. 35).

Further, they explain that the potential "downside of virtual workspaces is the possible resultant marginalization and stigmatization [of] people with disabilities; moreover, it may act to decrease (or at least alter) the kinds of social networks that people with disabilities have within their occupations. In turn, if social or workplace contacts are limited, then people with disabilities operate at a disadvantage within the work environment." (Baker & Fairchild, 2005, p. 35) At the core of many positions are personal interaction and exchange.

One of the ultimate goals of the Tech Act is to increase access to assistive technology for persons with disabilities in order to promote assimilation into wider society, especially in terms of employment opportunities. If teleworking creates a de facto segregation and marginalization of employees with disabilities from their peers without disabilities, then teleworking programs ironically run counter to the primary purpose of the Tech Act. This is an important and critical consideration that will be acknowledged, considered, and challenged later in this study.

Some argue that telework inherently alienates and prevents true workplace integration and acceptance for employees with disabilities. Milpied (1995) points out this conflict:

> For people with disabilities, namely those facing difficulties while going to work, i.e. commuting, this new freedom in the choice of the work place seems positive. Working at home or in a telecentre close to the residence removes the stress of traveling: latenesses, additional fatigue, etc. However, from another perspective, can't we consider home-based teleworking as a retrograde step going against employment legislation on behalf of people with disabilities? For some authors, home-based teleworking is "a cynical attempt by employers to conform with the letter of their statutory obligation to employ a quota of people with disabilities without incurring the expenses of making adaptations to the work place." (p. 243)

Milpied rightly points out some of the conflicting views about telework. On one hand, telework presents an opportunity for many individuals with disabilities to seek gainful employment who otherwise may not be able to work; on the other hand, those who telework are often separated from the rest of the office. If integrating employees with disabilities into the workplace is a fundamental goal of legislation, then telework could potentially be construed as a step back from this goal.

Despite these potential criticisms of telework, it continues to be one of the most compelling answers for individuals, with or without disabilities, who could pursue employment from home when in-office employment proves inopportune. Further, Milpied (1995) points out that it is often a challenging and complicated decision for

employers to offer teleworking opportunities for employees with disabilities. She argues that the assertion that home-based teleworking is a “cynical” effort by employees to meet quotas without altering the office may “be too categorical. Going for telework is not an easy choice for employers. Specific constraints could make them reluctant to opt for telework for people with disabilities.” (p. 243).

In an attempt to retain skilled workers, telecommuting programs reduce personal restraints while allowing more employee discretion over work relations. This structure results in greater autonomy and flexibility; however, it may also produce ambiguity on the part of organizations, which may lead to concerns for future career opportunities (Wellman et al., 1996). When teleworking employees are physically separate from other employees as well as from a centralized hub, those employees can feel alienated from organizational goals and opportunities.

Wiesenfeld et al. (2001) reported that teleworkers fear an "out of sight out of mind" situation may occur without working on-site, resulting in career-impacting decisions by their supervisors if they are not considered for key projects or promotions due to their distance from supervisory line-of-sight. Failure to create a well thought out, detailed and deliberate approach for communicating, as well as the design and development of team relationships, ensures the breakdown of successful telecommuting efforts (Gibson et al., 2002).

When working at home, familial or personal duties can potentially distract employees, thereby reducing their effectiveness and efficiency as workers, splitting their time and focus between personal obligations and professional obligations, which are

conflated due to their environment. Further, one of the core issues concerning management and telecommuters alike is the physical and mental separation between teleworkers, co-workers, supervisors, and other organizational members (Haines et al., 2002). This separation can be a psychological detriment to both teleworking and non-teleworking employees. Many employers and employees believe that "corporate culture" is an important aspect of employment; disseminating and engaging in a corporate culture is difficult when employees are teleworking from differing remote locations rather than in one building.

Indeed, sometimes remote working situations are mutually unbeneficial, especially when the work situation is poorly designed and/or implemented. According to one study, "virtual work may alter organizational structures and systems, individual work roles and required skills, and even how individuals define themselves with respect to the organization" (Wiesenfeld et al., 2001). Echoing this sentiment, Baumeister and Leary (1995) argued that individuals have a strong inherent need to associate and identify with other humans in established long-term positive relationships, and without these frequent, stable interactions, people experience stress, anxiety, depression, and sometimes negative physiological systems (Gainey et al., 1999). Teleworking could potentially produce these negative results.

Aspinwall and Taylor (1992) and Dormann and Zapf (1999) all suggest that work-based support comes through communication with individuals in close proximity to one another. Yet for telecommuters, close proximity is not an option. However, the people with whom teleworkers interact on a regular basis may come to provide this same support

structure (Wiesenfeld et al., 2001). Case studies of successful teleworkers with disabilities conducted by the Oregon Department of Energy (2004) reported part-time telecommuting to be advantageous over full-time telecommuting since it provides better interaction between co-workers and supervisors.

Organizational identification is defined as an individual's perception of belonging to an organization. In order for an organization to have meaning in a telecommuter's mind, the individual member must have positive organizational identification (Wiesenfeld et al., 2001). The person-environment fit theory applies to organizational identification theory in the relationship between personal characteristics of the telecommuter and his or her environment (Wiesenfeld et al., 2001).

For example, if the fit between telecommuting and the teleworker is good, then higher feelings of personal satisfaction and commitment should mitigate feelings of isolation. If the feelings of isolation are high and the personal satisfaction, motivation, and commitment levels are low, then misalignment exists between the person and his or her environment (Edwards, 1996 as cited in Haines et al., 2002).

This misalignment can lead to teleworkers leaving the company in search of a better person-environment or person-organization fit, which leads the teleworker to the attraction-selection-attrition (ASA) theory. ASA theory predicts the fit between a person's values to those of the organization forecasting an individual's level of satisfaction, commitment, performance, and turnover (Schnider et al., 1995). Such models can be important in helping policymakers and employers design suitable, effective systems of telework.

The following section considers various studies that have analyzed teleworking from a number of different perspectives. Further, many studies have compared the United States to Europe with respect to teleworking. International comparative studies reveal how the United States can potentially improve its telework infrastructure, as well as the growing scope of telework that has resulted from increasingly-advanced communicative technologies.

Telework Studies

Numerous studies have evaluated the efficacy and design of telework systems. A study by Santana and Rocha (2002) effectively summarizes many of the debates surrounding telework – its benefits and drawbacks, its perceptions and expectations, its effect on employers and its promise to employees with disabilities. The study noted that it was almost universally accepted that telework presented a unique opportunity for those with disabilities to achieve consistent employment.

However, according to the study, a consensus on the type of work – and the type of workers – suitable for telework had not emerged at the time of its publication. The study also recommended the most suitable future goals for employers that seek to implement a telework program, stating that organizations interested in telework should be "finding out the competencies potential teleworkers need to have, enabling the progress of training actions and the development of insertion strategies adapted to the teleworkers and to the needs and expectations of employing companies" (Santana & Rocha, 2002, p. 441).

Santana and Rocha's (2002) study also pointed out that telework was in the process of expanding; employers were beginning to acknowledge the myriad uses of telework. The activities pointed out by the inquired managers [in previous studies] as being suitable for being developed in the telework regime were, essentially, jobs like word processing and data entry. Though the possibilities for telework have expanded as technology has expanded, it is still important to consider each individual case, and analyze whether telework would be the most suitable employment arrangement for the employee and the employer.

According to Santana and Rocha (2002), "each employment opportunity and each teleworker should be regarded and analyzed as special cases, in order to guarantee satisfaction and full integration of the teleworker, on one hand, and an efficient answer to the expectations and legitimate wishes of the companies on the other hand" (p. 446). Ultimately, Santana and Rocha's study leaves readers with several important points with respect to the implementation of telework – its various goals, design, and barriers. Telework must be implemented by employers and policymakers in a precise and planned fashion because not all tasks are suited for telework and employers must often be convinced of its efficacy.

Several studies have analyzed the efficacy of telework for employees with disabilities. An early study by Murray and Kenny (1990) in Ireland demonstrated that teleworking is feasible in a variety of situations. They set up 11 teleworking arrangements that varied in terms of employee and employer characteristics. The involvement of each participant was studied during a period of half a year to a year and a

half. At the conclusion of the study, eight of the employees with disabilities were still employed, and all but one had arranged for continued employment in their organization.

Murray and Kenny (1990) found that telework would only be successful under a number of certain conditions. First, the employers would need to take care in choosing the particular workers who were involved in telework. While many employees with disabilities - as well as many without disabilities – would undoubtedly respond well to telework, others might not. Second, the organization would need to assure that the type of work is suitable for telework. Just as some workers are more suited to telework, particular tasks can undoubtedly be more suited than others. And third, employers would need to effectively and consistently manage telework units. An insufficient or unreliable telework unit would not only hinder efficient production, but also alienate and frustrate employees with disabilities.

Murray and Kenny's (1990) study also cited the fact that teleworking arrangements could be successful in a number of different configurations – in some cases, all work could be done from home, and in others, the employee could perform some of the work from home and also often join his or her coworkers in a traditional office for other activities. These telework configurations varied depending on the employee's comfort and the type of work being performed.

Murray and Kenny's (1990) study ultimately concludes on a positive note, predicting that telework would provide more opportunities for those with severe disabilities to work in the future. Further, the study makes an important point that often gets overlooked – telework provides the opportunity for those who acquire a disability

while working to retain their position. Despite the promise of telework, the researchers also warned that the success of telework relied on proper preparation, training, communication and supervision.

Several years later, Bricout (2004) considered the use of telework for employees who had suffered spinal cord injuries (SCI). Compared to the early study by Murray and Kenny (1990), Bricout's more contemporary study allows current researchers to see how telework has progressed and whether it has lived up to its early promise. Noting the "psychological, psychosocial and economic benefits of employment" (p. 147), the researchers focus on the difficult return-to-work process experienced by individuals with SCI.

The researcher notes that telework provides an answer to the challenges often experienced by individuals with SCI, including "job demands, mobility limitations, transportation needs and fatigue imposed by medical complications" (Bricout, 2004, p. 147). Bricout concludes by stressing the need for individuals, workgroups and organizations to effectively prepare for implementing telework as a common program for those with disabilities to begin or return to work. This recommendation underscores the widespread assertion that telework programs across the United States generally continue to be underdeveloped.

As mentioned earlier, the number of U.S. employees who are interested in and would benefit from telework vastly outpaces the number of telework employment opportunities currently offered in the United States. Though telework has had a long time period to mature in the United States as an effective program for individuals with

disabilities who seek to achieve successful, consistent employment, many studies cite continuing pervasive problems and unrealized opportunities with telework programs. Baker, Moon and Ward (2006) cite many of these barriers and opportunities.

First, as mentioned prior in this chapter, Baker, Moon and Ward (2006) note the fact that telework is fundamentally unlike telecommuting. While telecommuting is simply performing the work of the office at home, thereby avoiding a commute, telework restructures the manner of the task completely, which represents a fundamental shift in the role of technology and how it affects employment tasks, as well as the potential relationship that individuals with disabilities might have to the employment opportunities available to them.

The unique structure and design of telework, as well as its affect on traditional employment tasks, presents both opportunities and barriers that are dissimilar from telecommuting. Many of these opportunities have already been delineated earlier in this chapter; Baker, Moon and Ward clearly contend that telework "might open increased opportunities for the hiring of people with disabilities" (p. 421). However, telework has far-reaching economic and social implications that affect more than just people with disabilities.

The authors also point out that telework could potentially "place severe constraints on the type of work, workplace environment and interactions, and accumulation of social capital for people with disabilities" (p. 421). Ultimately, this study demonstrates that the United States can continue to improve its telework efforts in the hopes of maximizing positive benefits and minimizing detrimental effects. Employers

must be prepared and cognizant of opportunities and potential setbacks if they hope to establish a successful telework program.

Teleworking: The United States & the European Union

The question remains, then, of how to continue implementing telework opportunities and expand the United States' telework infrastructure. The United States and the European Union (EU) have both acknowledged the importance of providing a pathway to employment and return-to-work programs for individuals with disabilities, though each has achieved different results and has focused on different aspects of this shared goal.

In many ways, telework is more advanced and has progressed more in the EU than in the United States. Not only does the comparison between international teleworking systems indicate areas for improvement and demonstrate the importance of collaboration, but the comparison also reveals information about respective cultural and national philosophies on work and disability. Baker and Fairchild (2005) touched on this point, writing:

> Technological advances such as the diffusion and adoption of ICTs can have significant social consequences, some of which are anticipated, while others are unexpected. The deployment of these technologies can be uneven and are influenced by the local (or national) political, cultural, and economic contexts, and the degree of access to enabling technologies subject to a wide array of policy and regulatory responses reflective of fundamental philosophical assumptions. (p. 41)

Several studies have considered the similarities and differences between each international entity with respect to remote employment programs for individuals with disabilities. These studies are critical for current research about telework. By analyzing, challenging and adapting the European model of telework, the United States has the opportunity to expand its own telework infrastructure, much to the benefit of employers and employees alike. Indeed, these studies should not limit their scope to merely the United States or the EU.

A comprehensive study by Schopp (2004) sought to compare telework for individuals with disabilities in the EU and the United States. She pointed out the fundamental difference between the two – the United States lags with respect to telework infrastructure, whereas the EU lags with respect to providing assistive technologies to employers and individuals with disabilities:

> In comparison to EU services, United States Vocational Rehabilitation services are relatively strong with respect to individualized job counseling and assistive technology training and equipment. However, telework in the United States has generally ignored the policy dimension and focused almost exclusively on a home-based independent contract agent model. (p. 49)

Such a model is not only short-sighted, but also cost-ineffective and can potentially reduce efficiency. Schopp continued:

> In so doing, the U.S. vocational rehabilitation service structure has almost completely failed to address system and community-level telework supports, such as telework policy, telecentres, telecottages, employer

> incentives to hire teleworkers with disabilities, and other similar policy solutions that are relatively more mature in the EU. (p. 49)

Schopp (2004) noted that what little opportunity there is for telework in the United States comes from a home-based independent contract agent model, rather than from community-based telecenters or telecottages. Schopp outlines how the lack of telework opportunities and infrastructure in the United States affects teleworkers, whether they have or do not have disabilities:

> Therefore, U.S. workers are at risk for social isolation, often lack job benefits working for an employer, lack networking opportunities that come with being part of a larger business or organization, and are therefore left to fend for themselves with or without the skills to handle the challenges of private entrepreneurship. (p. 49)

Schopp's study highlights the fact that the Unites States' telework infrastructure and policy has much room for improvement, and that the EU's model might be a potential model to follow.

The EU has supported telework for many reasons that would also prove valid in the United States, including its numerous economic and social benefits. Schopp (2004) explains:

> Teleworking, or working from a distance, has received strong support from the European Commission… Telework is a priority of the European Commission because it has very favorable potential social implications, such as decreased pollution, increased worker flexibility, better collective use of networked employment resources that can be used by many companies or many workers, and reduced burdens related to transportation

> and commuting. Persons with disabilities are likely to benefit substantially from teleworking opportunities, as accessible transportation remains a significant barrier to work outside the home or neighborhood. (pp. 47-48)

Ultimately, Schopp contends that the United States and the EU would both benefit from sharing information with each other pertaining to their respective disability support programs, focusing on potentials areas for improvement. She writes, "The USA and the EU would benefit from an exchange that would enable each to benefit from their complementary strengths on service and policy levels, respectively" (p. 49).

Indeed, the USA and the EU each run programs that complement each other, and combining their respective approaches into a singular program in the United States could potentially result in a comprehensive teleworking program that more effectively responds to the needs and interests of employers and employees – both those with and without disabilities – and falls in line more directly with the fundamental goal of the Tech Act.

Other Countries' Experiences with Teleworking

Several studies have focused on individual countries within the EU, noting each country's respective successes and failures. Though the specific aspects of telework on which these studies focus may vary from country to country and from study to study, each provides important information and perspective for the continuing development of U.S. telework infrastructure.

In Germany, Pieper and Hermsdorf (1998) analyzed their country's research and development project on teleworking for people with disabilities, known as TEDIS. The

goal of TEDIS is to "implement a generic human computer interface for accessing [the] Internet" (p. 1479). However, based on the case study that the researchers provide, this goal proved problematic. In particular, the researchers emphasized the fact that specific disabilities required different telework set-ups. For instance, "operating a mouse causes many problems for motorically-impaired, blind or visually impaired end-users," which required a unique interface (p. 1479). The study details efforts to devise a general, yet customizable, computer input interface for individuals with disabilities, no matter what the particular disability may be.

Ultimately, the study emphasized the difficult nature of implementing a general telework program, noting that each individual with a disability required specialized attention. The continued efforts of TEDIS to implement a generalized interface for teleworkers are undoubtedly of great interest to telework policymakers and researchers both in Europe and in the United States.

In Italy, Zampiceni (1994) conducted a study about individuals with disabilities who sought a job in computer applications programming. Out of the individuals with disabilities who participated in the study, 80% successfully found consistent employment at a computer software firm, many through telework programs. The remaining individuals were unable to procure employment. Zampiceni demonstrates that most of these individuals were unable to find employment due to "geographic origin and degree of autonomy" (p. 249).

Advances in telework opportunities over the decade since the study was first conducted have likely allowed many individuals, who previously would have remained

unemployed, to find gainful employment. The high rate of successful employment for individuals with disabilities articulated in Zampiceni's (1994) study anecdotally and unscientifically suggests that Italy had found more widespread success with respect to teleworking programs than had the United States even at the early stage of development, 1994, during which the study was initially published.

Also in Italy, Buland and Dahl (2000) presented a more tempered look at the increasing ubiquity of telework. While they accept that telework and other information technologies present a unique opportunity to integrate individuals with disabilities into workplaces and society at large, they also contend that in order for these programs to be effective on a wide scale, telework programs must be coupled with other, non-technological efforts to integrate individuals with disabilities into society. They argue, "the technological element [of telework and other integrative technologies] may become too dominant, thereby preventing the necessary steps of a non-technical kind to be taken" (p. 263).

Ultimately, Buland and Dahl (2000) make a critical point – while telework provides much promise and has already made important improvements in the employment prospects of individuals with disabilities, telework – and technology in general – should not supplant or preclude wholesale efforts that target other aspects of the living experience for individuals with disabilities. This maxim proves valid not only in Italy or the EU, but also in the United States. Their advice marks just one of the many methods that advanced research on teleworking in Europe can guide the path of progress in the United States.

In total, these European studies highlight the differences between the United States and the EU in teleworking opportunities. As mentioned, the United States has comparatively underdeveloped its teleworking infrastructure, in contrast to the large investments in teleworking infrastructure made in the EU. As a result, any efforts to improve the telework infrastructure in the United States could benefit from the example of already-existing and successful international models. Analyzing the telework policy in the EU presents researchers and policymakers with this opportunity. We can learn a lot from these European studies.

Schopp (2004) explicitly made this point in her study of U.S. and European models of telework, noting that each international body can learn much from each other, as each has taken a different path toward the same goal – successfully integrating individuals with disabilities into social and working life. Schopp argued:

> Favorable outcomes (e.g., increased availability of teleworking options for persons with disabilities, increased job retention of teleworkers, decreased reliance on public assistance funding among European and USA citizens with disabilities, etc.) are expected to result from a beneficial bi-directional flow of information between the U.S. and the EU. First, Vocational Rehabilitation policy makers in the USA will benefit from an intensive examination of the more mature policy infrastructure that undergirds the EU's teleworking initiatives. (p. 50)

Of course, not only would the United States benefit from the sharing of information. The EU, as well, could learn from the successes of the United States in

responding to the needs of individuals with disabilities on an individualized basis with assistive technologies. According to Schopp (2004):

> At the same time, EU policy makers will benefit from receiving information about the range and funding structures of intensive individual-level services available to USA teleworkers with disabilities (e.g., job counseling services, assistive technology services). Such services can likely improve the marginal past success rate of teleworking programs among Europeans and Americans with disabilities. (p. 50)

Ultimately, these comparisons between telework policies in the EU and the United States only highlight the need, importance, and promise of an effective and comprehensive telework policy. Despite the abiding promise of telework, if the United States fails to apply successful components of the European model of telework to its own telework infrastructure and design, then telework in the United States, by default, will be stunted.

Indeed, the in-depth study of the European model of telework provides us with specific policy recommendations for future reform in the United States. Such reforms could potentially widen the scope of those who would benefit from telework, and would also increase the efficiency of those who employ telework. These reforms would benefit both employers and employees – both those with and without disabilities. According to Santana and Rocha (2002), there are several specific efforts that would immediately improve telework infrastructure in the United States:

> Some of the tasks that can be developed are: setting up of eventual telecentres; acting as the "visible face" of the telecentres and as an initial guarantee of the quality of services (an essential role, given the newness of

> telework and some distrust shown by the companies); putting on a list of clients and activities; developing of clients' loyalty; training, directly related to the identified opportunities; giving support to the teleworker in work contracts negotiations and arranging psychological support for the teleworker when it demonstrates it to be necessary. (p. 446)

This section provided a comprehensive overview of teleworking as it relates to the study, noting its design and comparing various models. The next section will introduce and discuss a quantitative approach, which is the methodology that will inform this study.

Summary

This chapter covered numerous topics that are fundamental to this research. First, it outlines general information about individuals with disabilities in the United States – specifically, with respect to their quality of life and opportunities for employment. There are millions of U.S. citizens who have some form of disability, and a large percentage of these individuals are in the workforce. Research has predicted that this number will only increase in the coming decades. Unfortunately, many individuals with disabilities have not been able to take advantage of employment opportunities, nor have many been able to successfully benefit as members of their communities. Research has shown that unemployment and slow or failed integration into community and home life results in a lower self-reported quality of life.

There are a number of reasons for these barriers, including abiding misperceptions about disability, discrimination, and lack of support. However, legislation – specifically,

the Tech Act and the Assistive Technology Act – have sought to give individuals with disabilities the tools and opportunities they need to become active, contributive, and prosperous members of U.S. society. This ongoing project – as well as the abiding challenges that predicated it – underscores the need for studies and ongoing research to critically evaluate the successes and failures of legislation. Ongoing research is also needed to ensure the more comprehensive goal of assisting individuals with disabilities to take advantage of every possible economic and social opportunity, as well as become more involved members of their personal and professional communities, which will enhance quality of life.

The chapter further discussed the role of assistive technologies in helping individuals with disabilities seek new opportunities in the workforce as well as in their communities at large. Assistive technologies, and the assistive services that often accompany them, serve several general purposes for those with disabilities, which were delineated earlier in this chapter. Compared to other countries, the United States is fairly advanced in its ability to provide assistive technologies in the workplace on a case-by-case basis, responding to the unique needs of individuals with disabilities. Further, individual counseling and advice, often given by occupational health providers, can often provide a suitable solution to setbacks caused by disability that benefits the employee, his or her peers, the employer and society at large.

However, the inclusion of assistive technologies in the workplace often faces resistance or misunderstanding from employers, which suggests not only the need for continued education and training for employers and occupational health providers, but

also the potential need to devise other systems of employment for individuals with disabilities that avoid the debates, confusion, and complication that often stems from implementing assistive technologies in-house. While assistive technologies may be a suitable answer for some individuals with disabilities who are seeking employment, others would undoubtedly benefit much more from other effective models of employment, such as the unique employment model offered by telework. The ongoing debates surrounding employment opportunities for individuals with disabilities only highlights the need for a comprehensive program that responds to the myriad needs of employees, both those with and without disabilities.

Following this initial description of assistive technologies, the chapter provided a critical overview of studies that focused on the unique challenges of employees with disabilities. Further, the chapter also considered the benefits, debates, and concerns that have surrounded the use of assistive technologies in the workplace. This section presented numerous points. First, it noted that despite the influx of assistive technologies in the workplace, employees with disabilities continue to face numerous challenges and barriers to employment. One of the most notable of these barriers is transportation, which often proves arduous or impossible for employees with disabilities; in the past, public transportation has been denied.

The section further noted that employees with disabilities often face discrimination and bias in questions of employment; though much progress for employees with disabilities has been made in the United States since important legislation has been passed, employers still need to be educated about their legal requirements and

the benefits of hiring employees with disabilities, whether to work in the office or through a remote system such as telework. Further, this section delineated the various challenges that employees with disabilities might face in the workplace, which may or may not be alleviated by the use of assistive technologies.

This chapter then considered telework as a potential answer to this dilemma. Instead of merely working remotely, telework represents a fundamental restructuring of tasks that can be performed outside of the office using information communication technologies. Around the world, telework programs have had numerous successes – admittedly, as well as failures – and continue to show great promise with respect to helping individuals with disabilities find employment that suits their needs, skills, and unique situation.

There have been both proponents and critics of telework programs. Proponents cite that telework gives employment opportunities to employees with severe disabilities who otherwise could not work in a traditional office. Critics argue that telework tends to alienate employees with disabilities and, instead of integrating these employees into workplaces; telework further separates them from meaningful employment and much-needed social interaction. However, studies have shown that well-designed and effectively-managed telework programs can avoid these pitfalls, as well as provide economic, social and technological benefit to employees, both those with and without disabilities, and employers alike.

Despite the promise of telework, the implementation of telework programs has lagged in the United States, especially compared to the EU. This chapter considered

numerous studies that focused on the EU's telework programs. While some lauded the EU's commitment and success with telework, others temper the praise and critically analyze the European model of assistance for individuals with disabilities. Ultimately, though, these studies reveal that the EU has had much success from telework programs, and that the United States could effectively implement many of their European counterpart's policies.

However, the United States continues to retain a strong edge with respect to individualized training and counseling for individuals with disabilities, as well as the country's efforts to integrate assistive technologies into the workplace. The United States and the EU could both benefit from the sharing of information and successes related to the employment of individuals with disabilities. However, more specific to the purpose of this study, the United States could benefit from studying the European model of telework, which has largely proven successful.

This chapter briefly considered some of the major literature surrounding the quantitative approach, which has been proposed for use in this study. Ultimately, this study assumes that the quantitative method of study is most suitable for the proposed research, and will provide a compelling and comprehensive look at the topic of research.

Overall, this chapter presented an overarching view of the numerous topics that are the basis of this research, and elucidated many of the debates that surround the issues of quality of life, employment for individuals with disabilities, assistive technologies, telework and related public policy.

CHAPTER III: Methodology

Design

Quantitative Research

This is a descriptive study where quantitative research methods were utilized. Quantitative research is all about quantifying relationships between variables, namely independent and dependent variables, usually with statistical analysis. In determining relationships between variables, which is information gathered from a sample population, careful conclusions *may* be drawn or generalized to larger populations from which the sample represents. Statistical analyses are used to express these relationships with effect statistics, such as relative frequencies, correlations, differences of means, and in some cases higher echelon statistics such as Spearman's Correlation Coefficients, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests, and Ordered Logistic Regression.

Studies aimed at quantifying relationships have one of two designs: descriptive or experimental. In descriptive studies, subjects are only measured, surveyed or observed once. Descriptive studies are also referred to as observational studies because there is no intervention in an observational study. No attempt is made to change behavior or environmental conditions, variables are recorded as they are. Due to the nature of this type of research, one can only conclude associations between variables and not causality.

Fowler (2009) states, "The purpose of [a] survey is to produce statistics, that is, quantitative or numerical descriptions about some aspects of the study population." (Fowler, 2009). Different research settings and different methods allow access to different levels of knowledge. Since this study setting was purely observational and the vehicle for data collection was survey research, the appropriate research method was quantitative.

Research Design

This study utilized a quantitative research method survey design. AFP clients were given the opportunity to fill out a survey consisting of 14 quantitative questions. Their responses were assessed and integrated. The impetus of this research was to determine clients' goals in applying for AFP funds, self-reported quality of life, independence level in the home and community, loan acceptance and denial status, the role of assistive technology & telework, and employment outcomes. The quantitative research method provided simplicity and clarity to this research design by quantifying the relationships under investigation in this study.

The research began with sampling AFP clients, which turned out to be more difficult than initially planned. An observational, or descriptive study, usually needs a sample of hundreds or even thousands of subjects to ensure an accurate estimate of the relationships quantified between variables. Only four of the 33 AFPs across the United States and territories agreed to provide access to their client base, so there were a limited number of clients to sample from the beginning. The sampling technique used for this

study was that of a sample of convenience. A sample of convenience consists of members of a population chosen because they can be easily accessed. Each of the four AFPs agreed to give full access to their database of clients, which consisted of 90, 250, 350 and 400 clients, respectively. Randomly sampling clients from a pool 1,090 would have lessened the chances of acceptable confidence intervals and/or statistical significance for small effects, so this was not done. Technically, the sampling method employed for this study qualified as a non-probability sampling technique. However, one could argue that the clients were randomly sampled according to the parameters of random sampling. Random sampling is a technique used to sample a subset of a population where the subset represents the whole population because the probability of getting any particular sample can be calculated. Since this study aimed to generalize only to the "whole" population of AFP clients, sending a survey to all 1,090 represented this population despite how many surveys, or from whom, they were returned. However, since true random sampling using statistical software was not employed, the sampling technique for this study is categorized as a non-probability sampling of convenience.

Descriptive statistics, although minimal, were collected and utilized for bivariate analyses of the responses to questions aimed to answer the main research questions. Comparisons of survey questions utilizing effect statistics as well as higher echelon statistics such as Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests and Ordered Logistical Regression provided answers to the remainder of the research questions posited in this study. The precision with which the survey questions were answered by AFP clients raises validity and reliability issues. In descriptive, or

observational, studies validity is essential. Validity represents how well a variable measures what it is supposed to do. If the main variables to be measured are poorly defined, it is difficult to "lift the signal from the noise" or find the effect outside of the errors in measurement. Reliability is how reproducible measurements are on a re-test, which gives the study further precision. Validity is more important for a descriptive study than reliability due to the fact that descriptive studies do not call for a re-test, or a second evaluation. Also, reliability tends to measure the same variable on different subjects where validity measures the same variable on the same subjects, which defines a descriptive study. However, both validity and reliability ensure precision, which is important and not to be confused with accuracy. Validity and reliability are further addressed in chapter four.

Ultimately, this study aimed to determine the quality of life of persons with disabilities who do and do not have access to assistive technologies, via AFPs. This quest, by default, delineated whether assistive technologies presented the opportunity to integrate into the workforce, thereby providing a better quality of life. This study also determined the role of telework in the lives of AFP clients and how this correlated to employment, quality of life, independence in the home and community as well as assistive technology access and use.

Rationale for Design

Early in this research endeavor, seven hypotheses were synthesized to investigate theories and ideas not addressed in current literature. From these hypotheses, five

research questions were developed as a guide for instrument development and statistical analysis. A quantitative research method was chosen due to the time constraints of the data collection period as well as for ease of data analysis. The hypotheses only called for the qualifying of relationships and not causality, so a quantitative research method was the most suitable fit for this study.

The data collection was done with a short, 14 question survey. The questions were kept short and clear as the audience for this survey was largely unknown. Every survey, and every AFP client for that matter, has some type of disability whether physical, mental or emotional. The severity and type of disability for any AFP client, or survey recipient, was unknown. For this reason, answer choices for each survey question were nominal or ordinal except for age, which was recorded as interval data. These answer choices clearly pointed to a quantitative study.

The reason a survey was chosen as the venue for data collection was a matter of confidentiality. The AFPs that agreed to give access to their client base wanted to maintain confidentiality for their clients. So as not to breach this privacy agreement, surveys were printed and sent to the AFPs, where they were addressed and mailed to the clients. The surveys were filled out by the clients and returned to the researcher. No identifying information was requested, so the researcher could not identify anyone. Since the researcher received the completed survey, the AFPs did not view any answers. They only knew who got a survey, not what they answered. An online version of the same survey was provided with the same security measures in place. Fowler (2009) states:

> Until the 1970's, most academic and government surveys were done by in-person, household interviewers. When telephone ownership became nearly universal in the United States, telephone interviewing became a major mode of data collection. The current frontier for data collection is the Internet. At the moment, its use is limited because many people lack Internet access and because the lists and strategies for sampling email addresses are limited. However, as access increases and sampling strategies evolve, the use of the Internet to collect survey data will certainly increase as well. (Fowler, 2009)

The online version of the survey was provided for those participants that preferred to answer electronically. However, many people do not have Internet access, so a paper version was also provided. It is possible that some of the AFP clients could have been applying for an AFP loan to obtain the very assistive technology that would allow them access to Internet and computer applications. This possibility supported the paper survey effort.

"[The] details of each aspect of a survey can affect its precision, accuracy, and credibility." (Fowler, 2009). In an effort to ensure instrument reliability, many Quality of Life (QoL) instruments were researched. Almost all of them recorded answers to questions with a Likert scale. One instrument in particular was the WHOQOL-BREF. (http://www.who.int/substance_abuse/research_tools/whoqolbref/en/) The 5-point QoL Likert scale was clear and easy to assess statistically. This same method for obtaining reliable answers was adopted for this study.

The research questions posited in this study warranted a thorough investigation. The research methods and rationale employed in this research endeavor provided the opportunity to answer the research questions and ultimately address the hypotheses fully. When addressed in light of the aforementioned literature, the daunting question is whether the Tech Act provided more and better opportunities for employment and telework to persons with disabilities. Ultimately, the investigation of this overarching question paved the way for this research. Fowler (2009) lends a supporting comment to this affect: "There probably is no area of public policy to which survey research methodology has not been applied." (Fowler, 2009).

Research Questions

The following research questions will be addressed:

1. How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?
2. Have AFPs increased access to employment for persons with disabilities (PWD)?
3. Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?
4. What motivations do AFP applicants have for applying for AT/Telework loans?
5. How has telework affected AFP applicants?

Table 1 indicates whether items in the research questions are dependent or independent variables.

Table 1
Research Questions & Variables

Research Question	**Dependent Variable**	**Independent Variable**
1. How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?	Quality of Life; Employment Outcomes	AFP Applicants
2. Have AFPs increased access to employment for persons with disabilities (PWD)?	Employment Outcomes	None
3. Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?	Working Abilities; Employment Outcomes; Telework Outcomes; Independence in the Home and Community	Assistive Technology; AFP Applicants
4. What motivations do AFP applicants have for applying for AT/Telework loans?	None	Motivations; AFP Applicants; Type of AFP Loan
5. How has telework affected AFP applicants?	Telework Outcomes	AFP Applicants

Table 2 further describes the dependent and independent variables.

Table 2
Variables & Descriptions

Variable/Type	**Description**
Quality of Life (D)	Self-Reported on Likert Scale
Employment Outcomes (D)	AFP applicant's employment status before and after AFP loan
Telework Outcomes (D)	AFP applicant's telework status before and after AFP loan
Independence in the home and community (D)	AFP applicant's independence in the home and community before and after AFP loan
Working Abilities (D)	Measured in terms of whether the AFP loan enhanced their ability to be employed
Assistive Technology (I)	Measured whether AFP applicant already owns/uses AT as well as how it affects them before and after AFP loan
Motivations (I)	Measured motivations for applying to AFP for a loan
AFP Applicants (I)	Accepted or Denied for the AFP loan

The five research questions posited in this study yielded five dependent variables defining what was observed, or studied. The four independent variables were defined by what could affect the dependent variables, or measures derived, originally, from the hypotheses. Four independent variables were chosen, as opposed to fewer, because each variable treated independently raises the chances of Type I error and decreases the chance of predicting an effect. The more independent variables included in the analyses the better chance of finding an effect. A correction using Bonferroni's 0.05/n, where n is the

number of independent variables, was used in instances where independent variables were not correlated.

This descriptive study has a narrower focus than most observational studies. The relationships quantified were specific and the sample of participants was restricted to the subgroups to which the variables defined. That being said, descriptive studies need very large sample sizes to detect small effects. This study included 155 participants, so the sample size was small for an observational study. To compound this issue was the number of independent variables. Each independent variable estimates the effect of what affects the dependent variable. Adding multiple independent variables does not affect precision, however, the more effects one looks for, the more likely the true value of at least one of them lies outside the confidence interval. To control for this, complex modeling was employed where applicable because the only other way to reduce Type I error is to increase sample size, which was not an option.

Hypotheses

The following hypotheses will be addressed:

1. Persons with disabilities (PWD) who utilize assistive technologies (AT) are more likely to have a higher self-reported quality of life (QoL) than PWD who do not utilize AT.

2. PWD who utilize AT are more likely to become employed or have greater employability than PWD who do not utilize AT.

3. PWD who telework are more likely to utilize AT than PWD who do not telework.

4. PWD who telework are more likely to have more independence at home and in the community than PWD who do not telework.

5. PWD who are employed have a higher self-reported QoL than PWD who are not employed.

6. PWD who have more independence at home and in the community have a higher self-reported QoL than PWD who do not have more independence at home and in the community.

7. PWD who have more independence at home and in the community are more likely to become employed or have greater employability than PWD who do not have more independence at home and in the community.

Table 3 indicates which research questions were used to explore each hypothesis.

Table 3
Hypotheses & Supporting Research Questions

Hypotheses	Research Questions
1. Persons with disabilities (PWD) who utilize assistive technologies (AT) are more likely to have a higher self-reported quality of life (QoL) than PWD who do not utilize AT.	1 & 4
2. PWD who utilize AT are more likely to become employed or have greater employability than PWD who do not utilize AT.	1 & 2
3. PWD who telework are more likely to utilize AT than PWD who do not telework.	4 & 5
4. PWD who telework are more likely to have more independence at home and in the community than PWD who do not telework.	3 & 5
5. PWD who are employed have a higher self-reported QoL than PWD who are not employed.	1 & 3
6. PWD who have more independence at home and in the community have a higher self-reported QoL than PWD who do not have more independence at home and in the community.	1 & 3
7. PWD who have more independence at home and in the community are more likely to become employed or have greater employability than PWD who do not have more independence at home and in the community.	2 & 3

Note. Each hypothesis has at least two research questions for exploration to increase reliability.

Population Selection

Access was given to four of the 33 AFPs located throughout the United States and territories. These included: (1) The NewWell Fund/ATLFA in Richmond, VA; (2)

Easter Seals Nebraska in Omaha, NE; (3) The Kansas Assistive Technology Cooperative in Emporia, KS; and (4) Credit-Able (AFP) The Center for Financial Independence & Innovation in Atlanta, GA. Each AFP director selected clients from their respective databases for confidentiality reasons already addressed. This was a non-probability sampling of convenience for three reasons: (1) Each AFP only had a certain number of clients available that fit the next two criteria. A random sample, or percentage, of their databases was not drawn because that would have decreased the sample size from the beginning. With any study depending on participants returning surveys in the mail, the return rate is expected to be low. By sampling all available clients, this increased the chances of a higher return rate, which is needed to increase sample size in any descriptive study. As discussed earlier, even though this was technically a non-probability sampling technique, one can argue that the probability of drawing any particular sample that would represent this population could be calculated. For that reason, this particular sampling method for this study did follow the parameters of a random sample because the population obtained was representative of the "whole" AFP client population.; (2) All clients in the AFP database who were parents or legal guardians applying for a loan for a minor were excluded; minors were not part of the target group for this study; and (3) The sample population was screened for "client age" meaning that any client that had been in the system for more than 2 years was deleted from the sample. The decision to filter out clients who had been in the database longer than 2 years was made to increase the likelihood of a better response rate. Client information is more likely to expire over time and to increase the chances of successful contact, filtering was essential. Even though

this screening parameter was in place, AFP directors reported 72 returned surveys due to incorrect addresses.

This being said, Holbrook et al. (2007) investigated whether the demographic representativeness of a sample was associated with lower response rates. It was found, after examining 81 national surveys with varying response rates from 5% to 54% that surveys with much lower response rates were only minimally less accurate (Holbrook et al., 2007). This is reassuring support from the literature since the response rate for this study was low at 14.22%. Surveys were mailed to 1,090 AFP clients from four AFPs and 155 were returned. The same survey was available online and only 14 clients chose to take the survey electronically. Table 4 is a frequency table of how many surveys were mailed and returned per AFP.

Table 4
Survey Return Rates per AFP

AFP	Surveys Mailed	Surveys Returned	Return Rate
The NewWell Fund/ATLFA in Richmond, VA	250	25	10%
Easter Seals Nebraska in Omaha, NE	90	32	36%
The Kansas Assistive Technology Cooperative in Emporia, KS	400	71	18%
Credit-Able (AFP) The Center for Financial Independence & Innovation in Atlanta, GA	350	27	8%

Instrumentation

The instrument for this study was a short survey provided to AFP clients who were chosen via methods previously discussed. The survey tool (See Appendix A) included three demographic questions which were age, gender, and education level. These variables were used to compare groups of the study population and were recorded for possible stratification purposes. The survey also included quantitative questions about quality of life, employment and telework experience. There were also several questions centered on assistive technology and what role it played in the applicant's life. Finally, there were questions about the motivations and goals of applicants when applying for AFP loans, either for AT or Telework. Each of the 14 questions were coded with answers that were categorized into one of three data types; Nominal, Ordinal or Interval. All of the questions were essential in providing profiles of applicants who were approved versus denied AFP loans. Ultimately, the survey questions served to answer the research questions, which addressed the hypotheses.

Several steps were taken to address content validity and construct validity, which became a very time intensive process. Content validity is validation that the questions being asked fall into the area under investigation. This research study began with a focus group including the researcher and the four AFP directors. After identifying areas of interest, hypotheses were developed. From the hypotheses, research questions and subsequently, the survey tool were developed. All survey questions aim to answer the research questions proposed and therefore fall under the area of investigation.

Construct validity requires that the survey questions actually measure what they intend to measure, or formally, the theoretical concept matches the measuring device. When developing the research questions as well as the survey questions, an expert panel was employed intermittently. After the research questions were developed, the AFP directors reviewed them to make sure they were in line with the themes previously discussed in the aforementioned focus group. After this step, the survey questions were developed and given to the same panel of AFP directors for two reasons: (1) to ensure the survey questions would ultimately "answer" the research questions and (2) to answer the questions themselves. Each AFP director was asked to answer each survey question with all the answers they thought would be a possibility. Since they knew their clientele very well, this was the best way to "test" whether the survey questions would be misunderstood. Indeed, there were several survey questions that were thought to be too misleading or ambiguous. With this new information, the survey questions were revised and sent to another survey panel. The second survey panel consisted of the same AFP directors, two educators (both PhDs), two management level employees, two peers (PhD Candidates), and two persons with disabilities, one person with a mental disability and one person with a physical disability. This panel was the most critical and the survey questions were revised significantly to address the many issues the panel encountered. Some of the complications outlined were understanding the questions designed as tables (See Appendix B), the format of the questionnaire, and the length of the survey. Questions were scaled back to 14 from 37, tables were enlarged, simplified and answer choices were either dichotomized or trichotomized, and each question was displayed with

a box to distinguish between questions. The final survey was not sent to a panel of potential clients as not to "waste" 10 clients with research that could not be used before Institutional Review Board approval (IRB).

In an effort to create ease and opportunity for the participants, an on-line version (See Appendix C) of the tool was made available. The paper version of the survey was mailed out first to ensure each person in the sample had an equal chance to fill it out if they were without Internet access. The Internet address was indicated on a post card reminder mailed out several days later. The address for the online survey was: www.SurveyMonkey.com/s/AFP. The on-line version of the tool was maintained by www.SurveyMonkey.com, which has the capability and software necessary to create a website that can be accessed with many different types of assistive technologies that make Internet use available for persons with disabilities. Due to the format of the survey questions, the online version of the tool had to be manipulated to address programming constraints. Some questions had to be split into two questions to maintain data integrity once the questions were answered. However, the content remained the same. The online survey address was sent via email to the same panel that last reviewed the original paper version. They were asked to use the online tool as if they had never seen it before. The address was later sent to several peers who had actually never seen the tool before to eliminate any familiarity bias. A few formatting changes were addressed, but no content changes had to be made. This concluded the validity and functionality testing of the online survey tool.

Procedure

Data Collection

Data was collected from four AFPs: (1) The NewWell Fund/ATLFA in Richmond, VA; (2) Easter Seals Nebraska in Omaha, NE; (3) The Kansas Assistive Technology Cooperative in Emporia, KS; and (4) Credit-Able (AFP) The Center for Financial Independence & Innovation in Atlanta, GA. These offices were contacted throughout the data collection process and maintained agreement to be part of this research effort.

Before data collection began, the survey tool was tested for content and construct validity via the methods previously discussed. All documents including an introduction letter from each AFP, an informed consent statement, and a reminder post card were finalized in preparation for IRB submission. The IRB application was submitted on 17 December 2009, and the reviewing officer requested changes on 14 January 2010. The IRB stated that the information written on the reminder post card (See Appendix D) was sensitive in nature and therefore should not be available on a postcard for anyone to read. The suggestion was to either change the verbiage on the post card, which meant re-submitting the IRB application, or to send the post card in an envelope. The latter decision was made and all post cards were mailed in envelopes to subdue the verbiage. IRB approval was granted on 26 February 2010 (See Appendix E).

After IRB approval, each AFP director drew qualifying clients from their database, excluding minors and any client that had been in the system longer than two years. The AFP directors kept a list of the clients separate in preparation for number

assignment. Each director indicated the number of surveys requested and surveys were copied, and packets were made consisting of a paper survey, a return envelope (with postage) addressed to the researcher, an informed consent statement, and an introduction letter from the requesting AFP. The packets were then mailed to the respective AFPs. Each packet, paper survey, post card reminder envelope and post card were labeled with survey numbers for two reasons: (1) the client would have the same survey number on their paper survey as well as on the post card to use for the online version, and (2) the AFP directors would know to address the main envelope as well as the post card reminder envelope to the same person. The directors kept a master list of what each client's survey number was so when names were randomly drawn for the incentive prize they would be able to cross-reference who to send it to. The directors were the only persons with access to the master list of clients to be surveyed; the researcher never had access to this list. After addressing both the main envelope which contained the paper survey and the post card envelope which included the reminder post card with an invitation to fill out the survey on-line, the AFPs mailed out the main envelope and the post card reminder envelope approximately a week later.

Only the researcher had access to data collected on the survey tool. The survey tool did not ask for any personal or identifying information. Likewise, the AFP directors knew which clients received a survey, but never saw the survey results. Two participants filled out a return address when they mailed back the paper survey. These envelopes were immediately shredded and after being shuffled with the other surveys, these two surveys could not be relocated among the others. All paper surveys were kept in a locked

file drawer during the course of the research and promptly shredded after being recorded electronically. All data files were stored with password protection and labeled by number in order to preserve the confidentiality of the applicants and the integrity of the data. All electronic data was destroyed after the research was published.

Informed Consent

The participants were informed that the data collected from this study would be utilized solely for research purposes and no identifying information would be held at the level of the researcher. The participant was also informed that if they decided not to participate in the study, then there was no chance of compensation for that individual. A respondent can only become a participant in a study if he or she is in agreement with the stated terms that are outlined in the informed consent statement. Respondents were also provided with information stating that they were not required to participate in the study. Specifically, they could drop out of the study and not complete the survey at any point.

Informed consent was addressed on five different occasions. When participants received their survey packets in the mail, the first page in the packet was the introduction letter from their respective AFP (See Appendix F). The introduction letter introduced the study, addressed informed consent briefly, and explained the incentive. The second piece of information was the three-page informed consent letter (See Appendix G). This letter was reproduced from an example referenced by Virginia Commonwealth University's (VCU) IRB website. The third piece of information was the survey, which included the following modified informed consent statement on the front page:

> Thank you for your participation. Please read the enclosed informed consent document before you fill out this survey. If you would like to continue your participation, please answer the following questions and mail back this survey in the pre-paid envelope. Your participation in the survey research is your consent. Please do NOT put your name on this survey form. The researcher cannot know any identifying information about any of the participants. You do not have to do anything with the informed consent document; it is for your information only. Thank you once again for your time!

The next time participants encountered informed consent verbiage was on the post card reminder that came in the mail several days after the initial survey packet. The post card addressed informed consent very briefly stating:

> Please go to:
> http://www.surveymonkey.com/s/AFP.
>
> Enter in your survey number to get started.
>
> Your participation is completely anonymous and voluntary. No personal or identifying information is collected and the researcher, Amy Davis, does not have access to any personal information. Please join in our research effort to collect data on quality of life and employment for persons with disabilities who are AFP applicants.

The purpose of the post card reminder, other than to remind participants to fill out the survey, was to introduce a second option for participation. The online survey was introduced at this time. The first page on the website contains modified informed consent verbiage:

> Your participation in this research is completely voluntary and anonymous. You may choose to skip questions with which you are uncomfortable, or to discontinue your participation if you wish. No identifying information will be collected that can link a respondent to specific responses, and IP addresses are not being recorded. This research presents minimal risk to you, however, the information we learn from the participants during the course of this research may help us define employment patterns following the purchase of assistive technology as well as how self-reported quality of life is affected by employment and independence. Completing this survey will indicate your consent to participate in this research.

The participants were exposed to informed consent statements at every juncture during this research process. At no time was it unclear that participation in this study was nothing more than "voluntary and anonymous."

Confidentiality

No personal or identifying information was collected via the survey tool. At no time did the researcher have access to personal records or any identifying information held by the AFPs. Likewise, the AFP directors never saw any completed surveys or had access to raw data as the returned surveys came directly to the researcher and the researcher was the only person with access to the online survey database. The surveys were numbered and each survey had a matching post card with the same number. If the participant chose to go on-line to take the survey, their marker number was entered as a password and subsequently invalidated the paper survey with that same number. This

only happened twice. Upon sampling their databases, the AFP directors created a coding system linking the marker numbers on the mailings to a specific client. The AFP directors were the only persons to see this master list, the researcher never had access to this information. This is important for three reasons: (1) Confidentiality of the AFP applicants was essential and was maintained; (2) Duplicate survey entries were controlled for when both applicants filled out the paper survey and then again filled out the on-line version; and (3) Compensation. After all surveys were returned and all data were collected via the on-line version, all participant numbers were entered into a statistical program with random selection capability, namely STATA. Five participants' numbers were randomly selected for compensation. Those five numbers were: NE139, GA387, GA369, KS356, and VA232. Compensation was a $35 Amazon.com gift certificate with no expiration date. The gift cards along with the winner numbers were mailed back to the respective AFPs and matched with a name and address. The researcher knew which AFPs to send the gift cards to because each AFP was coded with an alpha-numeric that began with their state's letter code. The AFP directors contacted the winners using their master lists and mailed the participant their gift card. The researcher will never know the names of who won.

Data Analysis

In determining the answers set forth by the hypotheses and research questions posited in this study, the data from the survey, both paper and online versions, were analyzed statistically, or quantitatively. Effect statistics as well as higher echelon

statistics were used to determine whether the employability or access to work differed between applicants whose loans were approved and applicants whose were denied. A mixture of effect statistics as well as higher echelon statistics such as Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests and Ordered Logistical Regression were used in conjunction with other descriptive statistics to determine whether significant differences in responses to survey questions asked of the participants existed with respect to the opinions and experiences of the applicants, their goals and motivations for applying for an AFP loan, and their self-reported quality of life. Further statistical examination included attempts to determine whether those differences in responses were statistically significant after controlling for demographic variations. Due to the fact that most of the variables produced ordinal or nominal data, many of the statistical tests were non-parametric tests. The variable 'age' was the only variable recorded as interval data. Many of the calculations using this variable were done with age transformed into nominal data.

Table 5 indicates which survey questions pertained to each research question and the analyses used to explore them.

Table 5
Research Questions, Applicable Survey Questions & Planned Analyses

Research Question	Survey Questions	Planned Analyses
1. How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?	1, 8, 12, 5, & 14	Compare QoL between Accepted & Rejected AFP applicants. Compare QoL and Desire to be Employed. Compare QoL and Employment Status.
Statistics: Spearman's Correlation, Kruskal-Wallis Test & Ordered Logistic Regression		
2. Have AFPs increased access to employment for persons with disabilities (PWD)?	1, 5, 12, 4, & 14	Compare Employment Status between Accepted & Denied AFP applicants. Compare Desire to be Employed between Accepted & Denied AFP applicants. Compare "Hindrance to Employment" between Accepted & Denied AFP applicants.
Statistics: Spearman's Correlation & Kruskal-Wallis Test		
3. Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?	1, 2, 5, 6, 9, 10, 11, & 14	Compare AFP clients who listed use of AT and Reported Working Abilities. Compare AFP clients who listed use of AT with Employment/Telework Status before and after AFP loan. Compare AFP clients who listed use of AT with Independence levels in the Home & Community.
Statistics: Spearman's Correlation, Kruskal-Wallis Test & Ordered Logistic Regression		

4. What motivations do AFP applicants have for applying for AT/Telework loans?	1, 3, 7, 12, 13, & 14	Compare Desire to be Employed and to Telework for all AFP clients. Compare what support AFP clients require and whether that motivated them to apply for an AFP loan. Compare Goals of AFP clients with what supports they require. Compare required support of AFP clients and Desire to be Employed/Telework. Compare Goals of AFP clients and Desire to be Employed/Telework.
Statistics: Spearman's Correlation, Kruskal-Wallis Test & Likelihood Ratio Chi Square Test w/Fisher's Exact		
5. How has telework affected AFP applicants?	1, 6, 7, 13, & 14	Compare Telework Experience between AFP clients who applied for Telework Loans and those who applied for other loan types. Compare Goals of AFP clients who applied for Telework loans with those who applied for other loan types. Compare all AFP applicants' Independence in the Community with their Desire to Telework. Compare all AFP applicants' Independence at Home with their Desire to Telework. Compare required supports of AFP applicants with their Desire to Telework.
Statistics: Likelihood Ratio Chi Square Test w/Fisher's Exact		

Note. Survey questions referenced in Appendix H with data type indicated. All dependent variables were dichotomized and analyzed using logistic regression for supplementary analyses.

Limitations of the Research

Several limitations were encountered during the research phase of this study. One of the aims of this study was to examine the Tech Act in terms of whether the initiation of this policy resulted in removed barriers to independence and work opportunity for persons with disabilities. Although this question was investigated, it was not one of the main hypotheses posited in this study for the following reason. Initially, there were other AFPs interested in joining this research effort. After realizing that this study aimed to investigate public policy, two AFPs resigned from the study for fear that if a negative association was discovered in connection with the services they render and lack of fruition of public policy, funding could be in jeopardy. From that point on, the aforementioned hypothesis was withdrawn and only mentioned briefly in the literature and conclusion of the study.

The sampling methodology used for this study presented further limitation. Non-probability convenience sampling has both costs and benefits. The benefit was one of convenience. The participants made available for the research were all sampled with only two exclusion criteria; sampling no minors or persons in the database more than two years. One of the costs of this sampling procedure was lack of a true random sample, which can affect precision. When sampling a population, variation in subjects' characteristics should be eliminated as much as possible in order to estimate the effect of the treatment with accuracy and precision, or validity and reliability. This was difficult because the sampling pool was too small despite the fact that all available subjects were sampled. (The low response rate of 14.22% was addressed earlier in this chapter.) This

contributed to confounding. To adjust for confounding factors, subjects in the study population need to be either pooled together in like groups or the effect removed altogether. This was also difficult to do with a small sample size.

Further limitations included designing the survey instrument, the procedure for distributing it, and the accessibility that hindered response rate. The survey instrument proved to be too lengthy and complicated for persons with certain types of disabilities to complete. As a result, the survey was tailored to match the abilities of said population and in turn did not match the abilities of others. Important questions and concepts were lost as the survey was transformed to fit only one part of the population being sampled. This being said, the specific types of disabilities of the sampled population were not known, only assumed as this was sensitive information that would have been inappropriate to divulge.

The procedure for distributing the survey was also complicated. After every survey packet was created, each AFP received their requested number of surveys to distribute to their clients. The AFPs were burdened with addressing two envelopes for each participant and keeping a list of the participant's assigned number. This was done for confidentiality reasons; however, due to the fact that the individuals providing this service were not researchers and may not have understood the IRB regulations encompassing this research, it is unsure that the appropriate participants were mailed a survey. To credit this statement, one survey was returned filled out by a parent for a 7 year old who was the recipient of the assistive technology purchased by the parent. This

survey was immediately excluded, but nonetheless, this AFP client was not excluded from the sample population as requested.

Communication and accessibility were also limitations of the research because they hindered response rate. To alleviate accessibility issues, two avenues, (mail and Internet) were made available to survey participants in an effort to collect data with as much ease to the participant as possible. At least 72 surveys were returned to their respective AFPs due to incorrect mailing addresses. The percentage of surveys returned via mail (90.97%) was much higher than the percentage filled out online (9.03%). This was surprising considering the "Internet era" is upon us. One can only speculate that the reason participants chose not to fill out the online version of the survey was lack of Internet access, lack of assistive technology needed to access the Internet, or that the participants who would have filled out the survey had already sent in the paper version. Fowler (2009) states that "One of the most obvious potentially biasing features of the non-probability methods is the effect of availability." (Fowler, 2009) This statement held true for this study.

Summary

This quantitative method of study examines both employment of persons with disabilities and their quality of life with respect to assistance attained from the four AFPs that participated in this study. It is differentiated from other studies in both methodological approach and content of research.

In terms of content, three main aspects of this study separate it from previous literature conducted on disabilities, employment, and quality of life. First, the specific employment outcomes and quality of life views have not been collected in as much detail as they were in this study. Second, quality of life and employment data have not been collected nor analyzed with respect to their relationship to each other as they were in this study. Finally, employment and quality of life data on denied applicants was collected, which has not been adequately conducted by previous investigations.

CHAPTER IV: Findings

Introduction

The purpose of this study was to examine overall quality of life, independence, and employment outcomes for AFP clients. This research was conducted with a purely quantitative approach that explored the survey data comprehensively. The sample of individuals included 155 AFP clients from four of the 33 AFPs across the U.S. and territories whose low-interest loan applications were both accepted and denied.

The first section of this chapter defines the Alternative Financing Program clients as they were described in the data. Each variable is displayed in its own table for clarification of what the data "look like." This may seem superfluous, however, for this study, it is essential as the data are not normally distributed and many observations are missing from each variable. This will help reference questions that may arise as the analyses are reviewed.

The second section of this chapter focuses on the research questions. Tables and analyses are displayed to corroborate findings, when appropriate (very few statistically significant results were found to draw applauding conclusions sought by the researcher). All analyses are addressed in this section, if not in support of the hypotheses, then in suggestion for direction of future studies.

The last section addresses the hypotheses posited in this study. Fewer conclusions were determined than originally sought after because of the constraints

placed on the analyses in order to maintain validity and reliability. Finally, the chapter culminates with the discussion of validity, reliability, Type I & Type II errors, and an overview of the significance of the findings.

Alternative Financing Program Clients

The population in this study consisted of 155 AFP applicants from four of the 33 AFPs throughout the U.S. and territories. Of the 155 clients, 139 were approved for their low-interest AFP loan, six were denied, five had a pending status and five did not indicate their loan status. This is an important variable in that many of the statistical investigations, and one of the motivations for the research, were driven by this dichotomy (where only accepted versus denied observations were taken into account). Namely, one of the aims of this study was to determine whether AFPs increased access to employment and telework for persons with disabilities. This survey question was built to dichotomize the population in order to determine if loan acceptance or denial was associated with employment as well as the other variables being studied. Due to the fact that the data collected for this variable were extremely skewed, many of the resulting analyses were affected and therefore, carefully interpreted. Tables 6 and 7 indicate the overall client loan status for all 155 AFP applicants as well as what type of loan was applied for, which is important for later analyses.

Table 6
Loan Status for all AFP Clients

Loan Status	*f*	%
Accepted	139	89.7%
Denied	6	3.9%
Pending	5	3.2%
Missing	5	3.2%
Total	155	100%

Note. Loan Status recorded as nominal data and combined between loan type groups.

Table 7
Loan Status for all AFP Clients by Type of Loan

Loan Type	Accepted	Denied	Pending	Missing
AT	128	5	4	18
Telework	1	1	0	153
Self Employment	2	1	1	151
Self Employment to Telework	0	1	0	154
Other	8	2	0	145

Note. Aggregate data.

These data present a discrepancy in that when combined as in Table 6, the number of AFP applicants denied for a low-interest loan is 6 and when totaling this same category as in Table 7, the count is 10. The data were entered into a STATA dataset exactly as they were reported. Many of the variables were marked with conflicting

answers and no interpretation was made. An alternative possibility is that an AFP applicant was denied for one type of loan and later approved for a second, different type of loan. Determination of this possibility was no able to be discerned with these particular data. To compensate for this, quantitative reasoning in conjunction with statistical cleaning techniques were used to determine that only 6 AFP applicants were truly denied for a low-interest loan. This was just one of many instances where the absolute value, or raw data, could not be interpreted out of context.

Tables provided in Appendix I explore every variable collected in the survey tool. They are made available for quick reference while reviewing data from the research questions. Many of the variables contain few true observations resulting in high counts in the "missing" category. Many contain conflicting data as the respondents answered the questions incorrectly, which is addressed in the limitations of the study.

There were only three demographic questions asked in the survey tool. The purpose was to provide the study with population descriptors with which the other variables could be analyzed with. Gender (see Figure 2) was almost evenly split between males and females with only 1.3% of the data missing. Age (See Figure 3) was also nicely distributed with the category of "55 to 65" holding the largest percentage (25.2%) of respondents. Education (see Figure 4) was slightly skewed with 45.8% of the respondents indicating a high school education. Eighteen percent of the respondents marked having an Associate's degree followed by "Less than High School" and "Bachelor's," both of which were 11.8% of the respondent population.

Figure 2
Gender

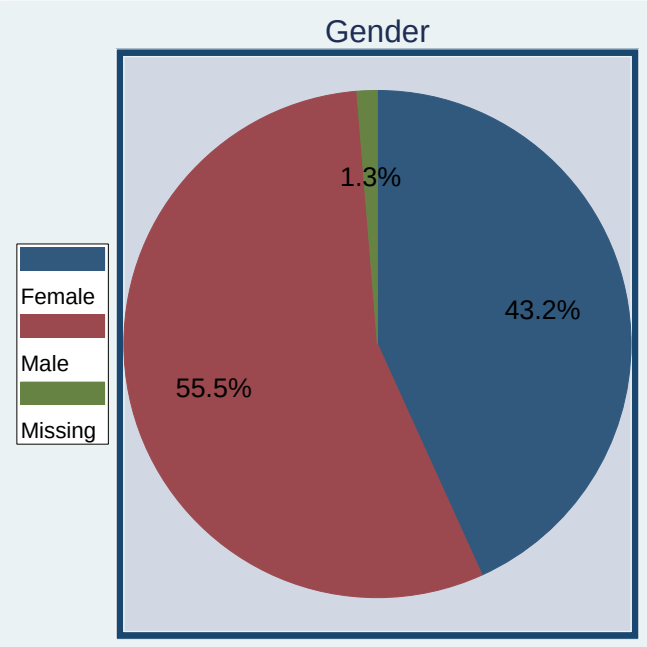


Figure 3
Age

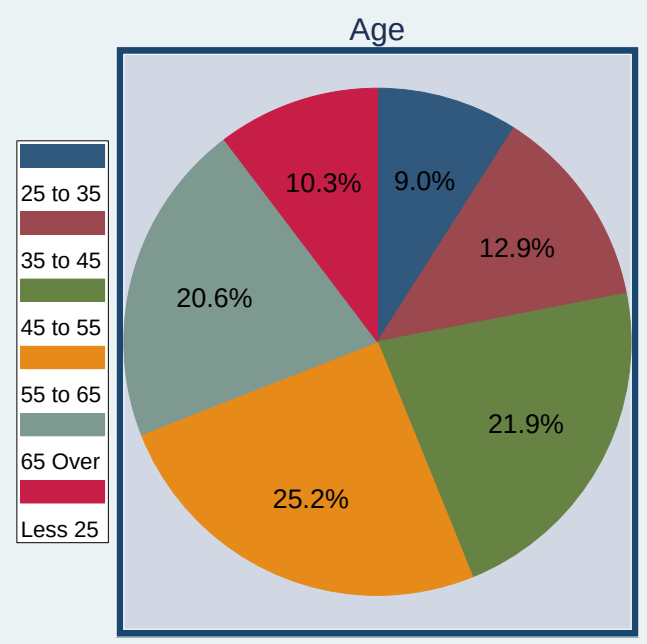
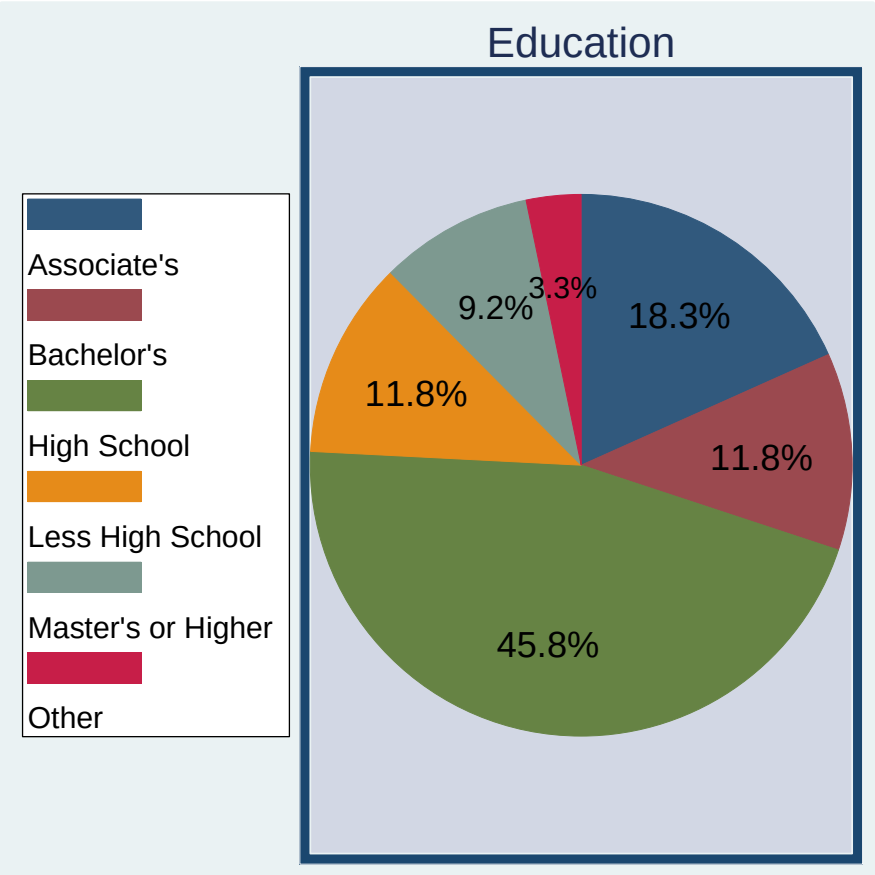


Figure 4
Education



At this juncture, population demographics were explored using the main variables studied during the course of this research. The demographics explored were gender (see Appendix J), age (see Appendix K) and education (see Appendix L). Statistical analyses only included cross-tabulations, which is the most appropriate statistic for initial informative investigations of relationships. The variables explored with the demographics were quality of life, independence at home and in the community, goals that motivated AFP applicants to apply for a low-interest loan, employment status and interest in telework.

STATA

STATA 9.0 software was used to analyze the data in this study. The latest ado_files and patches were downloaded in order to use the newest code available from www.stata.com/. All data were entered into a STATA dataset by hand. Information from the online survey, at www.surveymonkey.com/s/AFP, was downloaded into Excel and appended directly into the STATA dataset. Programming in the form of syntax was created in a STATA do_file. This gives the user control to go back to older syntax and make any necessary changes. The do_file runs from the raw data every time and, therefore, integrity of the original data was maintained.

Patterns in the Data

During the analyses of the data in this study, key patterns emerged early in the process. Many of these patterns developed into concerns as the analyses unfolded. Two of the main concerns were missing data and low cell numbers discovered during cross-tabulations of the variables. Many of the surveys were received with evidence that the respondent misunderstood the questions and the overall purpose of the study. This was to be expected, but not to the degree that it happened. Some survey questions were not answered at all and some survey questions were answered incorrectly, almost as if respondents randomly marked answers before reading the question. This study contains two types of missing data; missing at random (MAR) and missing completely at random (MCAR). Heitjan (1996) defines them as:

> Briefly, Rubin defined three key concepts: missing at random (MAR), observed at random (OAR), and parameter distinctness (PD). The data are MAR if the probability of the observed missingness pattern, given the observed and unobserved data, does not depend on the values of the unobserved data. The data are OAR if, for every possible value of the missing data, the probability of the observed missingness pattern, given the observed and unobserved data, does not depend on the values of the observed data. PD holds if there are no a priori ties between the parameters of the missingness model and those of the data model. The combination of MAR and OAR has come to be called missing completely at random (MCAR). (Heitjan, 1996)

The second concern was low cell numbers discovered after cross-tabulating the variables. Over half of the variables in the study contained low cell numbers; defined by fewer than five. Low cell counts present problems with data analyses in that accuracy, and thus usefulness, of the data are in jeopardy. There are several avenues to explore when attempting to correct for this problem. Two of those avenues for this study were variable transformation, or manipulation, and adjustment of the type of statistical test chosen for said particular variables.

Several of the variables were collapsed from nominal data with multiple categories into binomial or dichotomous variables. One variable, age, was transformed from interval data to nominal data due to the fact that it was the only interval variable in the study. This opened up possibilities to use it for non-parametric tests with other nominal variables. Table 8 depicts variable transformations and defines the new variable.

Table 8
Variable Transformations

Variable	Original Definition	Transformed Definition
ClientLoanStatus	Originally recorded with 5 separate variables	Binomial variable where 0=clients denied for loan and 1= clients accepted for loan
UltimatelyEmployed	Originally recorded with 4 different data points with before and after loan application delineation	Binomial 0=Not employed, and 1=Employed; collapsed from Employment question where client is employed, or employed and looking either before or after loan application
InterestedTelework	Originally recorded with 4 different data points with before and after loan application delineation	Binomial 0=Not Interested in Telework and 1=Interested in Telework; collapsed from Telework question where client is interested before and after loan application
NeedPhySupport	Ordinal data on a 4-point Likert scale	Binomial where 0=Don't need support and 1=Needs Support; collapsed all Likert categories that needed any level of support
NeedEmoSupport	Ordinal data on a 4-point Likert scale	Binomial where 0=Don't need support and 1=Needs Support; collapsed all Likert categories that needed any level of support
NeedFinSupport	Ordinal data on a 4-point Likert scale	Binomial where 0=Don't need support and 1=Needs Support; collapsed all Likert categories that needed any level of support
DesireEmploy	Ordinal data on a 5-point Likert scale	Binomial where 0=No desire for employment and 1=Desire for employment; collapsed Likert scale above 3 (neutral)
DesireTelework	Ordinal data on a 5-point Likert scale	Binomial where 0=No desire to telework and 1=Desire to Telework; collapsed Likert scale above 3, which equaled neutral
IndepHome	Ordinal data on a 5-point Likert scale	Binomial where 0=Not independent at home and 1=Independent at Home; collapsed Likert scale above 3, which equaled neutral

IndepComm	Ordinal data on a 5-point Likert scale	Binomial where 0=Not independent in the community and 1=Independent in the community; collapsed Likert scale above 3, which equaled neutral

The second avenue taken to control for low cell counts was adjustment of planned statistical analysis. Cross-tabulations were part of the planned analysis for this study; however, because they do not reveal any type of statistical relationship, they are usually for investigation purposes only. In this study, cross-tabulations became the staple statistical calculation as it was the only test that did not present any bias, reliability, or validity issues. Although the sample size in this study was large enough to entertain parametric statistics, the data were not normally distributed and had aforementioned low cell counts. Non-parametric statistics were immediately considered and Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests (with Fisher's Exact continuity correction), and Ordered Logistic Regression Modeling (also called OLogit Modeling or Proportional Odds Modeling) became the planned analyses for these data. The only test that was not performed was the 'brant' test of parallel regression assumption after the OLogit Models. The 'brant' test is a goodness of fit test for the OLogit model where if the test is significant, the assumptions for the data have been violated and the model is not a good fit. This test, despite an exhaustive effort, could not be patched into STATA 9.0. All OLogit Models could not be tested for violations of assumptions of the data and therefore were interpreted with the caveat that the results were not reliable.

Research Question 1

Q: How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?

This research question involved the use of four variables, namely, client loan status, self-reported quality of life, reported desire to be employed, and reported desire to telework. Tables 9 and 10 depict reported desire to be employed and employment status before and after applying for an AFP loan, which are the only two variables used in these analyses not already depicted in appendices.

Table 9
Reported Desire to be Employed

Desire to be Employed	*f*	%
No Desire	35	22.6%
Somewhat Desire	18	11.6%
Neutral	26	16.8%
Very Desirable	32	20.7%
Extreme Desire	37	23.9%
Missing	7	4.5%
Total	155	100%

Note. Desire to be employed reported on a 5-point Likert scale where 1=No Desire and 5=Extreme Desire.

Table 10
Reported Employment Status

Employment Status	*f*	%
Before AFP Loan		
Employed	36	23.2%
Employed, but looking for a job	8	5.2%
Waiting to hear back about a job	7	4.5%
Not Employed, but looking for a job	20	12.9%
Not Employed, & Not looking for a job	52	33.6%
After AFP Loan		
Employed	36	23.2%
Employed, but looking for a job	1	0.7%
Waiting to hear back about a job	2	1.3%
Not Employed, but looking for a job	21	13.6%
Not Employed, & Not looking for a job	40	25.8%

Note. Table contains aggregate data. Percentages based on 155 total clients in each calculation.

To address this research question, a comparison of self-reported quality of life between accepted and denied AFP applicants was necessary. Cross-tabulations (see Table 11) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 12).

Table 11
Self-Reported QoL by Client Loan Status

	Client Loan Status		
QoL	Accepted	Denied	Pending
Very Poor	5	0	0
Poor	16	1	1
Indifferent	32	1	2
Good	59	2	2
Excellent	24	2	0
Total	139	6	5

Note. Five observations missing.

Table 12
Results for Spearman's Correlation & Kruskal-Wallis Tests: Self-Reported QoL by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.25	-0.0950	
Kruskal-Wallis	.52		1.305(2)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between self-reported quality of life and whether AFP applicants were accepted or denied for their low-interest loans. The Kruskal-Wallis Test also showed no significance meaning that the groups are not significantly different from each other. More precisely, quality of life is no different for

AFP applicants whose loans were accepted than for AFP applicants whose loans were denied.

Further analysis of research question one required a comparison of self-reported quality of life and the desire to be employed. Cross-tabulations (see Table 13) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 14).

Table 13
Self-Reported QoL by Desire to be Employed

	Desire to be Employed				
QoL	No Desire	Somewhat Desire	Neutral	Very Desirable	Extreme Desire
Very Poor	4	0	0	1	0
Poor	5	4	4	4	2
Indifferent	10	3	11	9	3
Good	13	9	9	11	18
Excellent	3	2	2	6	13
Total	35	18	26	31	36

Note. Both variables recorded on a Likert scale with 1=Worst Outcome & 5=Best Outcome. Table contains aggregate data.

Table 14
Results for Spearman's Correlation & Kruskal-Wallis Tests: Self-Reported QoL by Desire to be Employed

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.0001	0.3228	
Kruskal-Wallis	.001		17.729(4)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is significant at the 0.05 alpha level, and therefore there is correlation between self-reported quality of life and AFP applicants' desire to be employed. The Kruskal-Wallis Test also showed a significance *p*-value supporting the conclusion that there is a statistically significant difference in quality of life between the ordinal ranks of self-reported desire to be employed.

Further examination of research question one required a comparison of self-reported quality of life and employment status. The variable "UltimatelyEmployed" is defined dichotomously where AFP applicants report "yes" or "no" to being employed at all, before or after applying for a low-interest loan. Cross-tabulations (see Table 15) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 16).

Table 15
Self-Reported QoL by Ultimately Employed

	Ultimately Employed	
QoL	Yes	No
Very Poor	0	0
Poor	2	4
Indifferent	3	9
Good	18	8
Excellent	13	0
Total	36	21

Note. QoL recorded on a Likert scale with 1=Very Poor & 5=Excellent. Ultimately Employed collapsed from Employment status variable. Table contains aggregate data.

Table 16
Results for Spearman's Correlation & Kruskal-Wallis Tests: Self-Reported QoL by Ultimately Employed

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.0000	0.5423	
Kruskal-Wallis	.0001		14.540(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is significant at the 0.05 alpha level, and therefore there is correlation between self-reported quality of life and AFP applicants' employment status. The Kruskal-Wallis Test also showed a significance *p*-value supporting the conclusion that there is a statistically significant difference in

quality of life between AFP clients who reported they were employed and those who reported they were not employed.

Another statistical test supporting this conclusion is an analysis using Ordered Logistic Regression. Several models were tested and the best models were kept (see Tables 17 and 18). Due to the skewed nature of the data, multiple variables could not be included in these models. Error messages displayed in STATA read, "never found iteration" and "convergence not achieved." Also, the 'brant' command displayed as broken syntax because the appropriate ado_file could not be patched into STATA 9.0. The 'brant' test is used to test the proportional odds assumption, which tests for violations in assumptions of the data. If the test is significant, the assumptions of the data have been violated and the OLogit model is not a good fit. Interpretation of the significance of these models is not reliable.

Table 17
OLogit with QoL and Employment: Log-Odds

Variable	Coef.	SE	z	P>|z|
	Quality of Life[a]			
Ultimately Employed	3.06	.8284	3.69	.000
Desire to be Employed	-.25	.2374	-1.05	.29

Note. Number of obs = 56. LR chi2(2) = 20.18. Prob > chi2 = 0.0000. Pseudo R2 = 0.1421. Log Likelihood = -60.94198.
[a] QoL is the outcome variable.

This ordered logistic regression model displays several statistics of which are interpreted differently. The Likelihood Ratio (LR) Chi-Square test statistic measures whether at least one of the predictors' regression coefficients is not equal to zero in the model. The null hypothesis for this test is that all of the regression coefficients in the model are equal to zero. The small, or significant, *p*-value from the LR test leads one to conclude that at least one of the regression coefficients in the model is not equal to zero. The Pseudo R2 value is actually McFadden's pseudo R-squared and is not the equivalent to the R2 in ordinary least squares (OLS) regression. The R2 in OLS is the proportion of variance for the response variable explained by the predictors. The pseudo R2 in LR is merely a marker for what a true R2 would be and should therefore be interpreted with caution, if at all. The variable UltimatelyEmployed is calculated as the ordered log-odds estimate for a one unit increase in employability. So, if there is a one unit increase in UltimateEmployment (meaning going from unemployed to employed for a binomial variable), the ordered log-odds of having a higher quality of life score would increase by 3.06 provided all other variables are held constant. Although this interpretation is statistically correct, it is difficult to relate to in terms of what the variables mean. Therefore, another OLogit model was performed on these same variables using the odds ratio (OR) command, which lends to better interpretation of the variables (see Table 18).

Table 18
OLogit with QoL and Employment: Odds Ratio

Variable	Odds Ratio	SE	z	P>|z|
		Quality of Life[a]		
Ultimately Employed	21.32	17.66	3.69	.000
Desire to be Employed	.78	.18	-1.05	.29

Note. Number of obs = 56. LR chi2(2) = 20.18. Prob > chi2 = 0.0000. Pseudo R2 = 0.1421. Log Likelihood = -60.94198.
[a] QoL is the outcome variable.

The log-odds interpretation for the LR test tends to make less sense when applied to binomial variables, and so another LR test was calculated using odds ratios (OR). This interpretation is somewhat simpler to apply to, or make sense of, the variables. The OR model measures the proportional 'odds ratio' for one unit increase in employment given the other variables are held constant. The interpretation stands that for every one unit increase (going from unemployed to employed), the odds of having a higher quality of life score are 21.3 times greater provided the other variables in the model are held constant. There are several other statistics provided by LR models that are clearly displayed in the *Notes* of Tables 17 and 18. However, due to the fact that the models were not tested for goodness of fit, these statistics are not reliable and none will further be addressed.

Importance of Findings

The first research question asks, "How do Alternative Financing Program (AFP) applicants view their quality of life (QoL) and does employment play a role in their viewpoint?" The data showed very positive results for this question. Self-reported quality of life was examined for all AFP clients, whether they were accepted or denied for their low-interest loan. Some of the applicants reported that they were employed, where others reported they were not. The data showed that quality of life was significantly different for those AFP applicants who were employed. Precisely, higher quality of life scores were reported by those AFP applicants who were employed than those who were not employed. However, quality of life scores were no different between the two groups of accepted versus denied applicants.

The significance of these findings is that persons with disabilities who were employed enjoyed a better quality of life and whether their AFP low-interest loan application was accepted or denied did not make a difference in how they viewed their quality of life. The very important reminder here is that the aforementioned statement can only be applied to the small population of AFP clients who responded to the survey distributed in the course of this research. Possible generalizability to other AFP clients will be discussed in Chapter V.

Research Question 2

Q: Have AFPs increased access to employment for persons with disabilities?

This research question involved the use of four variables, namely, client loan status, whether disability hindered employment, employment status, and desire to be employed. Table 19 depicts whether the respondents' disability hindered them from finding employment. This is the only variable used in these analyses not already depicted in appendices.

Table 19
Whether Disability Hindered Finding Employment

Hinder	*f*	%
Yes	74	47.7%
No	32	20.1%
Pending Status	1	0.7%
I have not attempted to obtain employment	13	8.4%
Does Not Apply	26	16.8%
Other	9	5.8%
Total	155	100%

To address this research question, a comparison of employment status between accepted and denied AFP applicants was necessary. Cross-tabulations (see Table 20) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 21).

Table 20
Client Loan Status and Ultimately Employed

	Ultimately Employed			
Client Loan Status	No	Yes	Missing	Total
Denied	1	0	5	6
Accepted	19	35	85	139
Pending	0	2	3	5
Missing	1	0	4	5
Total	21	37	97	155

Table 21
Results for Spearman's Correlation & Kruskal-Wallis Tests: Client Loan Status and Ultimately Employed

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.11	0.2165	
Kruskal-Wallis	.53		0.393(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between client loan status and AFP applicants' employment status. The Kruskal-Wallis Test also showed no significance supporting the conclusion that there is not a statistically significant difference in client loan status between AFP clients who reported they were employed and those who reported they were not employed.

Further analysis of research question two required a comparison of self-reported desire to be employed and client loan status. In this case, client loan status is defined dichotomously where AFP applicants report "yes" or "no" to having been accepted or denied for their low-interest loan. Cross-tabulations (see Table 22) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 23).

Table 22
Client Loan Status and Desire to be Employed

	Client Loan Status				
Desire to be Employed	No	Yes	Pending	Missing	Total
No Desire	0	33	1	1	35
Somewhat Desire	1	16	1	0	18
Neutral	2	23	0	1	26
Very Desirable	2	28	1	1	32
Extreme Desire	1	34	2	0	37
Missing	0	5	0	2	7
Total	6	139	5	5	155

Table 23
Results for Spearman's Correlation & Kruskal-Wallis Tests: Client Loan Status and Desire to be Employed

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.97	-0.0036	
Kruskal-Wallis	.79		0.467(2)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between client loan status and AFP applicants' desire to be employed. The Kruskal-Wallis Test also showed no significance supporting the conclusion that there is not a statistically significant difference in client loan status between AFP clients who reported they desired to be employed and those who reported they do not desire to be employed.

Further investigation of research question two required a comparison of whether disability hindered finding employment and client loan status. The variable "Hinder" is defined as nominal data where respondents related whether their disability hindered them from finding employment. Cross-tabulations (see Table 24) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 25).

Table 24
Client Loan Status and Hindrance to Employment

	Client Loan Status				
Hinder	No	Yes	Pending	Missing	Total
Yes	4	66	2	2	74
No	1	28	1	2	32
Pending Status	0	1	0	0	1
Not Attempted[a]	0	12	1	0	13
Does Not Apply	0	26	0	0	26
Other	1	6	1	1	9
Total	6	139	5	5	155

[a] This variable is named "I have not attempted to obtain employment."

Table 25
Results for Spearman's Correlation & Kruskal-Wallis Tests: Client Loan Status and Hindrance to Employment

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.70	0.0319	
Kruskal-Wallis	.93		0.135(2)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between client loan status and whether disability has hindered finding employment. The Kruskal-Wallis Test also showed no significance supporting the conclusion that there is not a statistically

significant difference in whether AFP applicants' disabilities hindered them from finding employment between AFP applicants whose loans were accepted versus denied.

Importance of Findings

The second research question asks, "Have AFPs increased access to employment for persons with disabilities?" The data showed no statistically significant results for this question. Employment was examined for all AFP clients, whether they were accepted or denied for their low-interest loan. The data showed no significant difference in employment between accepted and denied AFP applicants. Hindrance to employment was also examined for differences between accepted and denied AFP applicants, and no statistical significance was found. The variable "hindrance to employment" is nominal data and is defined as whether disability hindered the individual from finding employment.

The significance of these findings is that persons with disabilities who were not employed or hindered from finding employment were not adversely affected by the status of their low-interest loan from the AFP. However, acceptance of AFP low-interest loan applications was not associated with employment for persons who were employed. Again, a very important reminder to consider is that the aforementioned statements can only be applied to the small population of AFP clients who responded to the survey distributed in the course of this research. Possible generalizability to other AFP clients will be discussed in Chapter V.

Research Question 3

Q: Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?

This research question involved the use of seven variables, namely, client loan status, list of AT devices, how those AT devices affected quality of life, independence and ability to work, and employment and telework status. Other variables included self-reported independence at the home, independence in the community, and self-reported ability to work, all of which were ordinal variables recorded on a 5-point Likert scale. Tables 26 - 30 depict listed use of AT, interest in telework, independence in the home and community, and self-reported ability to work, which are the only five variables used in these analyses not already depicted in appendices.

Table 26
Listed Use of AT

Listed AT Use	*f*	%
Yes	131	84.5%
No	12	7.7%
Missing	12	7.7%
Total	155	100%

Table 27
Interested in Telework

Interest in Telework	*f*	%
Yes	27	17.4%
No	128	82.6%
Total	155	100%

Table 28
Self-Reported Independence at Home

Independence at Home	*f*	%
Not Independent	24	15.5%
Somewhat Independent	43	27.7%
Neutral	23	14.8%
Very Independent	41	26.5%
Extremely Independent	23	14.8%
Missing	1	0.7%
Total	155	100%

Table 29
Self-Reported Independence in the Community

Independence in the Community	*f*	%
Not Independent	27	17.4%
Somewhat Independent	46	29.7%
Neutral	32	20.7%
Very Independent	35	22.6%
Extremely Independent	14	9.0%
Missing	1	0.7%
Total	155	100%

Table 30
Self-Reported Ability to Work

Ability to Work	*f*	%
Not Able	63	40.7%
Somewhat Able	32	20.7%
Neutral	16	10.3%
Very Able	23	14.8%
Extremely Able	19	12.3%
Missing	2	1.3%
Total	155	100%

To address this research question, a comparison of working abilities between AFP applicants who listed the use of AT and those who did not was necessary. Also examined was the relationship between those AFP applicants who listed use of AT and whether said

AT increased their ability to work. The difference in these two variables is subtle, but real. The former variable, "Ability to Work," was ordinal data recorded on a 5-point Likert scale where 1=Not Able and 5=Extremely Able. The latter variable, "Increased Ability to Work," was binomial data recorded as a follow-up question after the respondent was asked to list whether they use or planned to use AT. After listing their AT use, respondents were asked if this specific type of AT would increase their ability to work. These questions were purposefully similar to control reliability. Cross-tabulations (see Tables 31 and 32) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely Spearman's Correlation, Kruskal-Wallis Test, and Ordered Logistic Regression (see Tables 33 - 35).

Table 31
Reported Ability to Work by Listed AT Use

	Listed AT Use			
Ability to Work	No	Yes	Missing	Total
Not Able	3	54	6	63
Somewhat Able	2	27	3	32
Neutral	2	13	1	16
Very Able	3	18	2	23
Extremely Able	2	17	0	19
Missing	0	2	0	2
Total	12	131	12	155

Table 32
Increased Ability to Work by Listed AT Use

	Listed AT Use			
Increased Ability to Work	No	Yes	Missing	Total
No	1	44	0	45
Yes	0	74	0	74
Missing	11	13	12	36
Total	12	131	12	155

Table 33
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)	Variable
Spearman's[a]	.20	-0.1088		Ability to Work
Spearman's[a]	.20	0.1181		Increased Ability to Work
Kruskal-Wallis	.97		0.537(4)	Ability to Work
Kruskal-Wallis	.84		0.041(1)	Increased Ability to Work

Note. All tests performed with listed use of AT.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 34
OLogit with Increased Ability to Work by Listed AT Use: Log-Odds

Variable	Coef.	SE	z	P>|z|
	Listed AT Use[a]			
Increased Ability to Work	-.245	.1969	-1.24	.21

Note. Number of obs = 141. LR chi2(1) = 1.53. Prob > chi2 = .22. Pseudo R2 = 0.0186. Log Likelihood = -40.276247. Best model, all three variables never "found iteration."
[a] Listed AT Use is the outcome variable.

Table 35
OLogit with Increased Ability to Work by Listed AT Use: Odds Ratio

Variable	Odds Ratio	SE	z	P>|z|
	Listed AT Use[a]			
Increased Ability to Work	.78	.15	-1.24	.21

Note. Number of obs = 141. LR chi2(1) = 1.53. Prob > chi2 = .22. Pseudo R2 = 0.0186. Log Likelihood = -40.276247. Best model, all three variables in the model resulted in "convergence not achieved."
[a] Listed AT Use is the outcome variable.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between working abilities and AFP applicants' listed use of AT. The Kruskal-Wallis Test also showed no significance supporting the conclusion that there is not a statistically significant difference in reported ability to work, or increased ability to work, between those who listed use of AT and those who did not list use of AT. Two Ordered Logistic Regression models, log-odds and odds ratio, resulted in lack of significant findings in support of the aforementioned statistical tests.

Further analysis of research question three required a comparison of employment status and all AFP applicants who listed use of AT. The variable "UltimatelyEmployed" is defined dichotomously where AFP applicants report "yes" or "no" to having been employed. Cross-tabulations (see Table 36) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 37).

Table 36
Employment Status by Listed AT Use

	Listed AT Use			
Employment Status	No	Yes	Missing	Total
No	1	18	2	21
Yes	4	31	2	37
Missing	7	82	8	97
Total	12	131	12	155

Table 37
Results for Spearman's Correlation & Kruskal-Wallis Tests: Employment Status by Listed AT Use

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.46	-0.1016	
Kruskal-Wallis	.71		0.138(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between employment and listed use of AT. The Kruskal-Wallis Test also showed no significance supporting the conclusion that there is not a statistically significant difference in employment between those who listed use of AT and those who did not list use of AT.

Further investigation of research question three required a comparison of all AFP applicants who listed use of AT with telework status, before and after applying for a low-interest loan. In this case, the variable "InterestedTelework" is defined dichotomously

where AFP applicants report "yes" or "no" to being interested in telework. Cross-tabulations (see Table 38) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Table 39).

Table 38
Interest in Telework by Listed AT Use

	Listed AT Use			
Interest in Telework	No	Yes	Missing	Total
No	9	110	9	128
Yes	3	21	3	27
Total	12	131	12	155

Table 39
Results for Spearman's Correlation & Kruskal-Wallis Tests: Interest in Telework by Listed AT Use

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.43	-0.0665	
Kruskal-Wallis	.70		0.145(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-value for the Spearman's Correlation Coefficient is not significant at the 0.05 alpha level, and therefore there is no correlation between interest in telework and listed use of AT. The Kruskal-Wallis Test also showed no significance supporting the

conclusion that there is not a statistically significant difference in interest in telework between those who listed use of AT and those who did not list use of AT.

The final assessment of research question three was a comparison of independence levels between AFP applicants who listed the use of AT and those who did not list use of AT. The respondent was asked to list whether they use any particular type of AT and immediately following that question was an option to mark "yes" or "no" if this AT would give them independence at home or in the community. Independence levels were also recorded as ordinal data on 5-point Likert scales, separately, for independence at home and independence in the community. Cross-tabulations (see Tables 40 - 43) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely Spearman's Correlations and Kruskal-Wallis Tests (see Table 44).

Table 40
Independence at Home by Listed AT Use

	Listed AT Use			
Independence at Home	No	Yes	Missing	Total
Not Independent	0	21	3	24
Somewhat Independent	5	36	2	43
Neutral	1	20	2	23
Very Independent	4	34	3	41
Extremely Independent	2	20	1	23
Missing	0	0	1	1
Total	12	131	12	155

Note. Independence variable recorded on Likert scale, separately from listed use of AT question.

Table 41
Independence in the Community by Listed AT Use

	Listed AT Use			
Independence in the Community	No	Yes	Missing	Total
Not Independent	0	24	3	27
Somewhat Independent	3	41	2	46
Neutral	4	24	4	32
Very Independent	4	29	2	35
Extremely Independent	0	13	1	14
Missing	1	0	0	1
Total	12	131	12	155

Note. Independence variable recorded on Likert scale, separately from listed use of AT question.

Table 42
Independence at Home by Listed AT Use

	Listed AT Use			
Independence at Home	No	Yes	Missing	Total
No	1	51	0	52
Yes	2	62	0	64
Missing	9	18	12	39
Total	12	131	12	155

Note. After listing use of AT, respondent was asked if this particular AT would give them independence at home.

Table 43
Independence in the Community by Listed AT Use

	Listed AT Use			
Independence in the Community	No	Yes	Missing	Total
No	1	11	0	12
Yes	3	110	0	113
Missing	8	10	12	30
Total	12	131	12	155

Note. After listing use of AT, respondent was asked if this particular AT would give them independence in the community.

Table 44
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)	Variable
Spearman's[a]	.48	-0.0590		Independence at Home (Likert)
Spearman's[a]	.29	-0.0893		Independence Community (Likert)
Spearman's[a]	.69	-0.0377		Independence Home (Binomial)
Spearman's[a]	.29	0.0950		Independence Community (Binomial)
Kruskal-Wallis	.94		0.754(4)	Independence Home (Likert)
Kruskal-Wallis	.88		1.218(4)	Independence Community (Likert)
Kruskal-Wallis	.91		0.012(1)	Independence Home (Binomial)
Kruskal-Wallis	.75		0.104(1)	Independence Community (Binomial)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-values for the Spearman's Correlation Coefficients were not significant at the 0.05 alpha level, and therefore there was no correlation between independence at home or independence in the community and listed use of AT. The Kruskal-Wallis Tests also showed no significance supporting the conclusion that there was not a statistically significant difference in independence at home or independence in the community between those who listed use of AT and those who did not list use of AT.

Importance of Findings

The third research question asks, "Have assistive technologies (AT) affected the working abilities, employment/telework outcomes or independence in the home and community for AFP applicants?" The data showed no statistically significant results for this question. The key variable in this research question is listed use of AT. Respondents were asked to list the types of AT they either used or wanted to use provided they were accepted for a low-interest loan for AT. If respondents listed any AT devices, a "yes" answer was recorded in the dataset for this question. The next questions asked were also "yes/no" questions as to whether the AT device(s) they listed would give them independence at home and independence in the community. Two separate questions inquiring about independence at home and in the community were asked later in the survey. These two questions were recorded on a 5-point Likert scale and used to reference for similarities in the previous independence questions. All four of these questions pertaining to independence were examined in terms of those respondents who actually listed AT devices they used or wanted to use. There was no difference in independence between the population of AFP clients who used AT or wanted to use AT and the population that did not.

The other variables used to examine this research question were: 1) Ability to Work; 2) Increased Ability to Work; 3) Ultimately Employed; and 4) Interested in Telework. As with the aforementioned independence variables, the variable "Ability to Work" was a separate question recorded on a 5-point Likert scale and the variable "Increased Ability to Work" was a response question connected to whether applicants

listed AT use or not. No statistically significant relationships or associations were found between the two populations in terms of working abilities. The two populations of listed AT users were also examined for differences in employment and telework; neither of which resulted in statistically significant relationships.

The significance of these findings is that, overall, no statistically significant relationships or associations were found between those respondents who listed AT use and those who did not list AT use. This was informative, and disappointing, as the aim of this question was to uncover an association between using AT devices and increased ability to work, employment, telework, and independence at home and in the community. Again, a very important reminder to consider is that the aforementioned statements can only be applied to the small population of AFP clients who responded to the survey distributed in the course of this research. This certainly does not mean that an association between these variables does not exist, only that this study was unable to uncover it.

Research Question 4

Q: What motivations do AFP applicants have for applying for AT/Telework loans?

This research question involved the use of four variables, namely, required support of the applicant (including whether that needed support motivated them to apply for a low-interest loan), goals that motivated the applicant to apply for a low-interest loan, desire to be employed, and desire to telework. All of the variables used to examine this research question have already been depicted earlier in Chapter IV.

To address this research question, the goals that motivated AFP applicants to apply for a low-interest loan were examined by client loan status. Each goal was examined separately because the respondents had the option to mark all the goals that applied to them. Due to the nature of this type of nominal data, percentages were not calculated. Cross-tabulations (see Appendix M) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely Spearman's Correlations and Kruskal-Wallis Tests (see Tables 45 - 54).

Table 45
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Self Care' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.39	-0.0705	
Kruskal-Wallis	.70		0.151(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 46
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Care for Others' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.53	-0.0512	
Kruskal-Wallis	.78		0.080(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 47
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Independence' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.11	-0.1320	
Kruskal-Wallis	.47		0.530(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 48
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Enhance Quality of Life' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.92	-0.0080	
Kruskal-Wallis	.97		0.002(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 49
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Participate in Recreational Activities' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.14	0.1207	
Kruskal-Wallis	.51		0.443(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 50
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Enhance Social Life' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.14	-0.1212	
Kruskal-Wallis	.50		0.447(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 51
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Increase Chances of Finding a Job' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.20	-0.1061	
Kruskal-Wallis	.56		0.343(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 52
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Want to Telework' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.33	-0.0799	
Kruskal-Wallis	.66		0.194(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 53
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Want to Start Own Business' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.05	-0.1616	
Kruskal-Wallis	.37		0.795(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 54
Results for Spearman's Correlation & Kruskal-Wallis Tests: Goal of 'Other' by Client Loan Status

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.12	-0.1291	
Kruskal-Wallis	.48		0.507(1)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Only one statistically significant relationship was found between goals that motivated AFP applicants to apply for a low-interest loan and client loan status.

Specifically, the goal of, "I want to start my own business" was correlated with client loan status, $r(153)= -.16$, $p=.05$. The Kruskal-Wallis test performed on these same two variables was not significant at the 0.05 alpha level. All other *p*-values for the Spearman's Correlation Coefficients were not significant at the 0.05 alpha level, and therefore there was no association found between goals that motivated AFP applicants to apply for a low-interest loan and client loan status. The Kruskal-Wallis Tests also showed no significance supporting the conclusion that there was not a statistically significant difference in accepted and denied AFP applicants and goals that motivated them to apply for their loan.

Further investigation of research question four required a comparison of all AFP applicants, both accepted and denied for their low-interest loans, with their desire to be employed and their interest in telework. The variables "Desire to be Employed" and "Desire to Telework" are both ordinal data recorded on a 5-point Likert scale. Cross-tabulations (see Tables 55 and 56) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely a Spearman's Correlation and a Kruskal-Wallis Test (see Tables 57 and 58).

Table 55
Client Loan Status and Desire to be Employed

	Client Loan Status				
Desire to be Employed	No	Yes	Pending	Missing	Total
No Desire	0	33	1	1	35
Somewhat Desire	1	16	1	0	18
Neutral	2	23	0	1	26
Very Desirable	2	28	1	1	32
Extreme Desire	1	34	2	0	37
Missing	0	5	0	2	7
Total	6	139	5	5	155

Table 56
Client Loan Status and Desire to Telework

	Client Loan Status				
Desire to Telework	No	Yes	Pending	Missing	Total
Do Not Desire	2	62	1	1	66
Somewhat Desire	1	11	0	0	12
Neutral	3	32	2	1	38
Very Desirable	0	17	2	0	19
Extreme Desire	0	8	0	0	8
Missing	0	9	0	3	12
Total	6	139	5	5	155

Table 57
Results for Spearman's Correlation & Kruskal-Wallis Tests: Client Loan Status and Desire to be Employed

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.97	-0.0036	
Kruskal-Wallis	.96		0.668(4)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 58
Results for Spearman's Correlation & Kruskal-Wallis Tests: Client Loan Status and Desire to Telework

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.35	0.0785	
Kruskal-Wallis	.92		0.905(4)

[a] Bonferroni correction utilized in Spearman's Correlation calculation.

The *p*-values for the Spearman's Correlation Coefficients were not significant at the 0.05 alpha level, and therefore there was no correlation between client loan status and desire to be employed or telework. The Kruskal-Wallis Tests also showed no significance supporting the conclusion that there was not a statistically significant difference in desire to be employed or desire to telework between accepted and denied AFP applicants.

Further examination of research question four compared the required supports listed by respondents with whether or not they further listed that said requirements

motivated them to apply for low-interest loans. The variables listed as "Requirements" were ordinal data recorded on a 4-point Likert scale where 0=Never and 4=Continuously. The variables listed as "Motivated" are nominal data recorded as a follow-up question to whether requiring support motivated loan application. Cross-tabulations (see Appendix N) gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical tests chosen for these assessments were non-parametric, namely Spearman's Correlations and a Kruskal-Wallis Tests (see Tables 59 - 67).

Table 59
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.84	0.0190	
Kruskal-Wallis	.02		7.613(2)

Note. Test performed between 'Required Physical Support from Family' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 60
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.36	-0.1332	
Kruskal-Wallis	.01		9.008(2)

Note. Test performed between 'Required Physical Support from Friends' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 61
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.10	-0.2236	
Kruskal-Wallis	.04		6.388(2)

Note. Test performed between 'Required Physical Support from Others' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 62
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.44	0.0868	
Kruskal-Wallis	.01		9.257(2)

Note. Test performed between 'Required Emotional Support from Family' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 63
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.65	0.0672	
Kruskal-Wallis	.09		4.928(2)

Note. Test performed between 'Required Emotional Support from Friends' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 64
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.61	-0.0817	
Kruskal-Wallis	.04		6.605(2)

Note. Test performed between 'Required Emotional Support from Others' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 65
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.04	0.2403	
Kruskal-Wallis	.02		7.738(2)

Note. Test performed between 'Required Financial Support from Family' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 66
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.73	-0.0580	
Kruskal-Wallis	.02		8.024(2)

Note. Test performed between 'Required Financial Support from Friends' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

Table 67
Results for Spearman's Correlation & Kruskal-Wallis Tests

Test Statistic	*p*-value	Spearman's rho	Chi 2 (df)
Spearman's[a]	.18	-0.1949	
Kruskal-Wallis	.01		8.424(2)

Note. Test performed between 'Required Financial Support from Others' & whether required support motivated them to apply for a low-interest loan.
[a] Bonferroni correction utilized in Spearman's Correlation calculation.

There were eight statistically significant relationships found between required support and whether those supports motivated AFP applicants to apply for a low-interest loan. Specifically, required physical support from family, friends, and others was significantly associated with the resulting motivation to apply for a low-interest loan. Required emotional support from family and others was significantly associated with the resulting motivation to apply for a low-interest loan. And, required financial support from family, friends, and others was the same. All of these statistically significant *p*-values were found with Kruskal-Wallis tests performed with a 0.05 alpha level of significance. The only Spearman's Correlation Coefficient found significant with a 0.05 alpha level was the association between required financial support from family and the resulting motivation to apply for a low-interest loan.

To further address this research question, the goals that motivated AFP applicants to apply for a low-interest loan were examined by what supports they required. The respondents had the option to mark all the goals that applied to them, so these data are

aggregate. The variables for required support were collapsed between family, friends, and others, so for each variable, "Physical," "Emotional," and "Financial," respectively, is a combined count for all three aforementioned categories. Cross-tabulations gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical test chosen for these assessments was non-parametric, namely a Likelihood Ratio Chi Square Test (see Table 68).

Table 68
Goals that Motivated AFP Applicants to Apply for a Low-Interest Loan by Required Physical, Emotional & Financial Support: LR Chi2 Tests

Goals	Physical	Emotional	Financial
Self Care	p=.01	p=.14	p=.64
Care for Others	p=.01	p=1.0	p=.01
Independence	p=.77	p=.49	p=1.0
Enhance Quality of Life	p=.71	p=1.0	p=1.0
Participate in Recreational Activities	p=.34	p=1.0	p=1.0
Enhance Social Life	p=.47	p=.57	p=.82
Increased chances of finding a job	p=.57	p=.74	p=.26
I want to Telework	p=1.0	p=.60	p=.69
I want to start my own business	p=.22	p=1.0	p=.22
Other	p=.17	p=.22	p=.52

Note. All Likelihood Ratio Chi Square Tests with Fisher's Exact, Two-Sided Values Reported. $X^2(1, N = 155)$.

There were three statistically significant relationships found between required support and the goals that motivated AFP applicants to apply for a low-interest loan. Specifically, required physical support was significantly associated with the goals of "Self Care" and "Care for Others." Required financial support was also significantly associated with the goal of "Care for Others." All three of these statistically significant *p*-values were found with Likelihood Ratio Chi Square Tests performed with a 0.05 alpha level of significance.

To further address research question four, the desire to be employed as well as the desire to telework were examined by what supports AFP clients required. Again, the variables "Desire to be Employed" and "Desire to Telework" were recorded on a 5-point Likert scale. The variables for required support were collapsed between family, friends, and others, so for each variable, "Physical," "Emotional," and "Financial," respectively, is a combined count for all three aforementioned categories. Cross-tabulations gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical test chosen for these assessments was non-parametric, namely a Likelihood Ratio Chi Square Test (see Table 69).

Table 69
Desire to be Employed & Telework by Required Physical, Emotional & Financial Support: LR Chi2 Tests

Desire to:	Physical	Emotional	Financial
Employed	p=.001	p=.02	p=.001
Telework	p=.75	p=1.0	p=.54

Note. All Likelihood Ratio Chi Square Tests with Fisher's Exact, Two-Sided Values Reported. $X^2(1, N = 155)$.

There were three statistically significant relationships found between required support and the desire to be employed. Specifically, the desire to be employed was significantly associated with required physical, emotional and financial supports. All three of these statistically significant *p*-values were found with Likelihood Ratio Chi Square Tests performed with a 0.05 alpha level of significance.

The last analyses addressing research question four were that of the desire to be employed as well as the desire to telework examined by the goals that motivated AFP clients to apply for a low-interest loan. Again, the variables "Desire to be Employed" and "Desire to Telework" were recorded on a 5-point Likert scale. The respondents had the option to mark all the goals that applied to them, so these data are aggregate. Cross-tabulations gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical test chosen for these assessments was non-parametric, namely a Likelihood Ratio Chi Square Test (see Table 70).

Table 70
Goals that motivated AFP applicants to apply for a low-interest loan by Desire to be Employed & Telework: LR Chi2 Tests

	Desire to:	
Goals	Employed	Telework
Self Care	*p*=.001	*p*=.67
Care for Others	*p*=.04	*p*=.03
Independence	*p*=.70	*p*=.04
Enhance Quality of Life	*p*=.08	*p*=.52
Participate in Recreational Activities	*p*=.51	*p*=.09
Enhance Social Life	*p*=.75	*p*=.20
Increased chances of finding a job	*p*=.001	*p*=.02
I want to Telework	*p*=.08	*p*=.001
I want to start my own business	*p*=.40	*p*=.07
Other	*p*=.65	*p*=.37

Note. All Likelihood Ratio Chi Square Tests with Fisher's Exact, Two-Sided Values Reported. $X^2(1, N = 155)$.

There were seven statistically significant relationships found between the goals that motivated AFP clients to apply for a low-interest loan and the desire to be employed and/or desire to telework. Specifically, the desire to be employed was significantly associated with the goals of "Self Care," "Care for Others," and "Increased chances of finding a job." The desire to telework was significantly associated with the goals of "Care for Others," "Independence," "Increased chances of finding a job," and "I want to telework." All seven of these statistically significant *p*-values were found with Likelihood Ratio Chi Square Tests performed with a 0.05 alpha level of significance.

Importance of Findings

The fourth research question asks, "What motivations do AFP applicants have for applying for AT/Telework loans?" Several statistically significant associations were found in examining this research question. A significant association was found between client loan status and the goal of "I want to start my own business." These variables were weakly, negatively associated, $r(153) = -.16$, $p = .05$. This is an interesting finding as there were only three applicants that applied for a loan for self-employment, one of which reported their status as pending acceptance. The interpretation for this relationship does not have much meaning.

A significant association was found between required support and whether needing that support motivated the AFP applicant to apply for a low-interest loan. Kruskal-Wallis Tests showed eight statistically significant *p*-values for these calculations. These statistically significant relationships have a more applicable interpretation in that when someone requires support, it makes sense that they would in turn be motivated to apply for a low-interest loan that may be able to afford them the opportunity to no longer need said support.

A statistically significant relationship was discovered between the goals that motivated AFP applicants to apply for a low-interest loan and the support they require. Specifically, the goals of "Self Care" and "Care for Others" were found to be statistically significantly related to needing physical support. The goal of "Care for Others" was also found to have a significant relationship with needing financial support. These

relationships also interpret well as caring for one's self or for others would require physical and financial support if a person's disability hindered them from doing so.

Statistically significant relationships were also discovered between the desire to be employed and required supports as well as goals that motivated the AFP clients to apply for a low-interest loan. Also found were statistically significant relationships between the desire to telework and goals that motivated AFP clients to apply for a low-interest loan. Many of these associations interpret nicely as required support might be mitigated by being employed. To be employed, traditionally, one would have to have physical, emotional and financial independence, which were the supports required in this instance. The associations between desire to telework and the goals that motivated AFP clients to apply for a low-interest loan are also nicely interpreted. The goals that were statistically, significantly associated with desire to telework were, "Care for Others," "Independence," "Participate in Recreational Activities," "Increase Chances for Finding a Job," "I want to Telework," and "I want to Start my Own Business." These goals align well with the desire to work from home and not in a traditional setting.

Research Question 5

Q: How has telework affected AFP applicants?

This research question involved the use of six variables, namely, required support of the applicant, goals that motivated the applicant to apply for a low-interest loan, desire to telework, independence at home, independence in the community, and telework experience. All of the variables used to examine this research question have already been depicted earlier in Chapter IV.

To address this research question, the goals that motivated AFP applicants to apply for a low-interest loan and the telework experience of AFP applicants were examined for all respondents who applied specifically for a telework loan and compared with the population of respondents who applied for other types of loans. Cross-tabulations gave an initial assessment of the variables. There was only one respondent who indicated application for a loan to telework. There were no statistical tests that could be performed on variables with 99% of the data missing. Refer to Table 71 for the cross-tabulation of telework loan status.

Table 71
Telework Loan Status

Applied?	*f*	%
Yes	1	0.65%
Missing	154	99.35%
Total	155	100%

To further address this research question, independence at home and in the community were compared with AFP applicant's desire to telework. The variables "Independence Home" and "Independence Community" were collapsed from the original ordinal variable recorded on a 5-point Likert scale. Only the respondents that marked "Very Independent" or "Extremely Independent" were recorded in the new variable. This new variable represents all who reported independence above the answer of "Neutral" on the Likert scale. The variable "Desire Telework" was also collapsed from the original ordinal variable where all responses greater than "Neutral" were recorded as "yes" to having a desire to telework. Cross-tabulations gave an initial assessment of the variables. Since there were low cell counts in both of the variables, the statistical test chosen for this assessment was non-parametric, namely a Likelihood Ratio Chi Square Test (see Table 72).

Table 72
Independence at Home & in the Community by Desire to Telework: LR Chi2 Tests

Independence	Desire to Telework
Home	p=1.0
Community	p=.65

Note. All Likelihood Ratio Chi Square Tests with Fisher's Exact, Two-Sided Values Reported. $X^2(1, N = 155)$.

There were no statistically significant associations found between independence at home or in the community for those who had a desire to telework.

The last analysis addressing research question five was that of the desire to telework examined by the required supports reported by AFP applicants. Again, the variable "Desire Telework" was collapsed from the original ordinal variable where all responses greater than "Neutral" were recorded as "yes" to having a desire to telework. The variables "Physical," "Emotional," and "Financial" were also collapsed from the original 4-point Likert scales and recorded dichotomously as needing support or not. Cross-tabulations gave an initial assessment of the variables. Since there were low cell counts in all of the variables, the statistical test chosen for these assessments was non-parametric, namely a Likelihood Ratio Chi Square Test (see Table 73).

Table 73
Desire to Telework by Required Physical, Emotional & Financial Support: LR Chi2 Tests

Desire to:	Physical	Emotional	Financial
Telework	p=.75	p=1.0	p=.54

Note. All Likelihood Ratio Chi Square Tests with Fisher's Exact, Two-Sided Values Reported. $X^2(1, N = 155)$.

There were no statistically significant associations between desire to telework and required physical, emotional, or financial supports.

Importance of Findings

The fifth research question asks, "How has telework affected AFP applicants?" Of the statistical calculations that could be performed in examination of research question five, no statistically significant associations were found in any of the calculations. This is

not to say that relationships between these variables do not exist, only that they were not uncovered during these analyses. One would certainly conceive of associations between the desire to telework and wanting independence at home and in the community. Also, one would not have to imagine that the desire to telework would not be related to requiring physical, emotional, or financial supports. However, these relationships will be left for future studies to discover.

Hypotheses

Hypothesis 1

H_a: Persons with disabilities (PWD) who utilize assistive technologies (AT) are more likely to have a higher self-reported quality of life (QoL) than PWD who do not utilize AT.

As stated in previous sections, the data showed that quality of life was significantly different for AFP applicants who were employed, who reported a higher quality of life, and AFP applicants who were not employed, who reported a significantly lower quality of life. Unfortunately, there was not enough data in this study to determine what caused the difference in quality of life. It could be anything from a feeling of satisfaction in having a job leading to a higher quality of life, to persons with disabilities using assistive technology at work and increasing their productivity leading to a higher quality of life. Further study into this difference should be considered for future research.

The lack of data was also present for some answers given in research question four. Specifically, there was a significant association between client loan status and the

goal of wanting to start a business, but the number of persons with disabilities who answered this question (three) could not support any legitimate interpretation of the data. It is debatable whether a study into this specific area would yield any useful research, as the low number of responses indicates that there were few persons with disabilities seeking low-interest AFP loans in order to start their own business.

The significant association found between required support and whether that motivated an AFP applicant to apply for a low-interest loan was not helpful in answering this hypothesis. The fact that a person who needs support is motivated to apply for a low-interest loan to assist in paying for that support is obvious. This also applies to the significant relationship between the goals that motivated AFP applicants and the support they required ("Self Care" and "Care for Others" were related to needing physical support).

The significant relationships found between the desire to telework and the goals that motivated AFP clients to apply for a low-interest loan does not assist in interpreting this data to answer this hypothesis. Required support might be mitigated by being employed. This relationship by itself, however, does not answer the hypothesis when the considerations listed above are accounted for. The significant difference, or lack thereof, between these categories led the researcher to fail to reject the null for hypothesis one.

Hypothesis 2

H_a: PWD who utilize AT are more likely to become employed or have greater employability than PWD who do not utilize AT.

This investigation sought to determine whether persons with disabilities that utilized assistive technology were more likely to become employed or have greater employability than those who do not by comparing whether their application for a low-interest loan was accepted to employment rates. The lack of statistically significant results in research question two ("Have AFPs increased access to employment for persons with disabilities?") made it impossible to interpret the data in a way that would assist in answering this hypothesis.

This investigation did determine that persons with disabilities who were not employed or hindered from finding employment were not adversely affected by the status of their low-interest loan from the AFP. Furthermore, the study showed that acceptance or denial of AFP low-interest loan applications had no impact on the quality of life for employed persons with disabilities. The lack of impact on quality of life coupled with the lack of statistical significance in other areas resulted in failing to reject the null for hypothesis two.

Hypothesis 3

H_a: PWD who telework are more likely to utilize AT than PWD who do not telework.

There is a statistically significant relationship between the desire to telework and the motivation of AFP clients applying for a low-interest loan, which was stated in previous sections. This can be interpreted to mean that required support might be mitigated by being employed. The goals that were statistically significant when compared to desire to telework were "Care for Others," "Independence," "Participate in Recreational Activities," "Increase Chances for Finding a Job," "I want to Telework," and "I want to Start my Own Business." These relationships, which came from research question four, could not answer the hypothesis by themselves. They had to be considered with the data in research question five.

Research question five was "How has telework affected AFP applicants?" No statistically significant associations were found with this question. Common sense dictates that there is a relationship on some level: telework is highly likely to increase independence at home and in the community. Furthermore, the requirements for physical, emotional, or financial supports are huge factors that should make a person more likely to desire telework. The lack of association in that question, however, forced the researcher to fail to reject the null for hypothesis three.

Hypothesis 4

H_a: PWD who telework are more likely to have more independence at home and in the community than PWD who do not telework.

A comparison of independence between respondents who had or wanted AT devices and respondents who did not have or want AT devices found no statistically significant difference between the two. Furthermore, the population of respondents that applied for a low-interest loan in order to telework was too low to properly draw any inferences. Given these facts, this examination led to failing to reject the null of hypothesis four.

Hypothesis 5

H_a: PWD who are employed have a higher self-reported QoL than PWD who are not employed.

Research question five sought to find how applicants of AFPs view their quality of life and whether employment played a role in their viewpoint. The statistical significance found in the data from this question was enlightening. Higher quality of life scores were reported by AFP applicants who were employed, when compared to those who were not employed. The fact that there was no difference between the two groups when comparing accepted versus denied applications was not relevant for this hypothesis. Since persons with disabilities that were employed had a higher self-reported quality of life, the researcher rejected the null of hypothesis five.

Hypothesis 6

H_a: PWD who have more independence at home and in the community have a higher self-reported QoL than PWD who do not have more independence at home and in the community.

The data in the first research question make it clear that persons with disabilities that are employed have a higher self-reported quality of life than persons with disabilities who are not employed. However, the data do not show that assistive technology plays a role in self-reported quality of life is. Furthermore, research question number three did not find any data to suggest that assistive technologies affected independence in the home or community for AFP applicants either.

The above assumed that assistive technology played a part in determining quality of life and independence at home and in the community. This was clearly not the case, evident by the lack of statistical significance found in those research questions when assistive technology was considered. Once assistive technologies are removed from the analysis, an association is seen between qualify of life and independence at home and in the community. In fact, respondents rated quality of life higher when they rated their independence in the home and in the community higher. Given this information, the data lead the researcher to reject the null of hypothesis six.

Hypothesis 7

H_a: PWD who have more independence at home and in the community are more likely to become employed or have greater employability than PWD who do not have more independence at home and in the community.

At first glance, one would quickly conclude that the appropriate answer to this hypothesis is 'fail to reject the null.' The reason for this conclusion comes from the research questions used to answer this hypothesis. Research question two asked whether AFPs increased access to employment for persons with disabilities, which led to no statistically significant results. That research question aimed to find a link between acceptance of low-interest loan applications through AFPs and employment, but none was discovered.

Research question three asked whether assistive technologies affected working abilities, employment/telework outcomes or independence in the home and community for AFP applicants. Again, there were no statistically significant results. The key variable in this research question was listed use of assistive technology.

Taking assistive technology out of the equation, however, shed some light on this hypothesis. The data show that persons with disabilities who have more independence in their community are more likely to become employed or have greater employability than persons with disabilities who do not have as much independence in their community.

While the above is true, that is only half of the alternate hypothesis. Even without taking assistive technology into consideration, the data show that persons with disabilities who have more independence in their home are not more likely to become employed or have greater employability than persons with disabilities who do not have as much

independence in their home. For this reason, the researcher must fail to reject the null for hypothesis seven.

Significance of the Findings

As the data had many missing observations in each variable and were skewed, three different power analyses were performed in an effort to determine if this study met the standard for statistical significance. Statistical significance in this case refers to the sample size being large enough to detect the smallest worthwhile effect, or in the case of study variables, relationships. To truly detect a worthwhile effect, a statistically significant result would have to be uncovered more than 95% of the time. That is, more than 95% if the time, one would expect to see a value for said effect numerically smaller than what was observed. This is defined as getting a *p*-value smaller than 0.05, which is the willingness to accept Type I Errors. A worthwhile effect is defined as the smallest effect that would make the difference in the lives of the study population. When interpreting effects, a statistically significant effect is acceptable no matter the sample size, but finding no effect with a small sample size is considered as an erroneous finding. All of these things considered, a study is deemed "powerful" if effects are being detected at least 80% of the time, meaning the Type II Error rate is 20% or less. Power analyses were done using STATA 9.0 to determine if the sample sizes in these data were adequate. The word "sizes" was used meaning several different variables were used in the power analyses due to the fact that that no one variable held all 155 observations; all of the variables contained significant amounts of missing observations.

Power analyses were performed between the means and standard deviations for quality of life and client loan status, listed use of AT and client loan status, and desire to be employed and desire to telework (see Tables 74, 75, and 76).

Table 74
Power Analyses 1

n	Variable	M	SD	N
n1	QoL	.9933	.2716	1
n2	Client Loan Status	3.5855	1.019	2

Note. H_0: m1 = m2, where m1 is the mean in population 1 and m2 is the mean in population 2. $\alpha = 0.05$ (two-sided). Power = .80 or 80%.

Table 75
Power Analyses 2

n	Variable	M	SD	N
n1	Listed Use AT	.9161	.2782	151
n2	Client Loan Status	3.5855	1.019	302

Note. H_0: m1 = m2, where m1 is the mean in population 1 and m2 is the mean in population 2. $\alpha = 0.05$ (two-sided). Power = .80 or 80%.

Table 76
Power Analyses 3

n	Variable	M	SD	N
n1	Desire to be Employed	3.1216	1.5114	32
n2	Desire to Telework	2.2377	1.3106	64

Note. H_0: m1 = m2, where m1 is the mean in population 1 and m2 is the mean in population 2. $\alpha = 0.05$ (two-sided). Power = .80 or 80%.

Power analysis 1 is an example of how this study did not meet the aforementioned criteria for being a powerful, or significant, study. Many of the variables were missing data points and therefore statistical analyses using these variables were not reliable. However, power analyses 2 and 3 show that this study was powerful in the sense that the rate of failed alarms for the smallest effect was 20% or less. The sample size required in power analyses 2, n2, is larger than the total sample size included in this study. Since this was one of the main variables included in most of the analyses, defining whether AFP applicants were accepted or denied for their low-interest loan, findings must be interpreted with care. In future research on this topic, a larger sample size should be obtained to meet the criteria for a powerful study.

This being said, significant relationships and associations found in the data are technically publishable, but should be interpreted with the caveat that further research should be done to ensure the true effect of the findings was uncovered and the data were fully explored.

Validity

Internal Validity

Internal validity is normally a concern in studies of causes and effect. As this was a descriptive or observational study, internal validity was not too large of a concern. However, one should always be mindful of internal validity in order to ensure sound

investigation practices. To this end, steps were taken in this study to prevent threats to internal validity as much as possible.

The typical threats to internal validity include regression to the mean, instrument error, practice effects, selection or assignment errors, attrition, history, and time-dependent internal changes. These are reduced by implementing controls for confounding and extraneous variables. Two ways to control include using an appropriate sampling method and a valid and reliable measuring instrument.

The plan for this study was to draw a completely random sample from the AFP applicants. However, due to population access constraints, a non-probability sampling of convenience had to be utilized. By doing this, some of the internal validity was sacrificed.

The instrument used in this study was a survey. The Cronbach's alpha reliability estimate was used in order to assess the reliability of the instrument. The estimates were low, which is addressed in the next section. Parts of the instrument, however, were found to be reliable.

External Validity

The external validity of this study, or how much this investigation could be generalized to other situations or populations, was a main concern. There were validity issues in both of the main types of external validity, population and ecological.

This study only drew from persons with disabilities who applied for a low-interest AFP loan from four of the 33 AFPs. This means that the data do not account for

applicants from 29 of the 33 AFPs. Furthermore, this study could not generalize to all persons with disabilities because the survey did not address people who did not apply for a low-interest loan from an AFP.

The major issue with the ecological validity came from the inability to distinguish between the generalized findings from this population and persons without disabilities. For instance, it could be that all persons (with or without disabilities) report a higher quality of life when employed.

To counteract these issues, this study sought to obtain a large sample size. To that end, 1,090 surveys were sent to persons with disabilities who applied for a low-interest loan from an AFP. Unfortunately, only 155 surveys were returned. This sample size was not large enough to reduce the likelihood of sampling error to an acceptable level, given the size of the population that this study sought to generalize.

Reliability

As mentioned above in the section discussing internal validity, the Cronbach's alpha reliability estimate was used in order to assess the reliability of the instrument. While there are several ways to estimate reliability, Cronbach's alpha was chosen because the estimates are very conservative.

Cronbach's alpha is used to estimate how much variance is consistent within data. It ranges from no consistent variance, at 00.0, to complete consistency, at 1.00. The result is expressed as a percentage. This does not show consistency over time or across forms, but those were not an issue with this study.

Cronbach's alpha was used to test the variance of nine variables in this study (see Table 77).

Table 77
Cronbach's Alpha Reliability Estimates

Variable	α	% Reliable
Quality of Life	0.0211	2%
Independence Home	0.1656	17%
Independence Community	0.2693	27%
Ability to Work	0.3371	33%
Employment Status	0.2642	26%
Telework Experience	0.3476	35%
Motivations	0.6064	61%
Hindrance to Employment	0.9531	95%
Required Supports	0.8622	86%

Note. Test Scale = mean(unstandardized items). Tested in STATA 9.0.

As seen in Table 77, only two of the variables had a reliability percentage above 80%. This does not necessarily mean that the survey was flawed: Cronbach's alpha estimates the consistency of the survey when answered by respondents. The degree of inconsistent variance present in the data, however, is high enough to call the complexity of the survey into question.

Summary

The assumptions in this study that were made when the research questions were drafted made it difficult to adequately answer the hypotheses. This was compounded by the complexity of the survey used in the study and the lack of responses received. The result was failing to reject the null of five of the seven hypotheses, usually because of a lack of statistically significant data. One hypothesis was worded so broadly that, even though there were statistically significant data, the researcher had to fail to reject the null.

Working through the research questions, the study was able to reject the null for two hypotheses. Specifically, this study was able to find that persons with disabilities who were employed had a higher self-reported quality of life than persons with disabilities who were not employed and that persons with disabilities who had more independence at home and in the community had a higher self-reported quality of life than persons with disabilities who did not have more independence at home and in the community.

CHAPTER V: Conclusions and Recommendations

Introduction

This chapter summarizes the research in its entirety, presents limitations of the study, discusses the findings in correlation with the literature review, recommends future studies, and makes recommendations for the Alternative Financing Programs. The chapter concludes with words on the need for future research, including ideas about potential research questions and methodologies that will result in a better understanding of these topics. Information regarding future research endeavors is included in order to aid other researchers who choose to do studies on these topics.

Summary of Study

This study assessed the effectiveness of the AFPs with respect to increasing the overall quality of life, independence at home and in the community, and employment rates for persons with disabilities. This was done by examining loan status, approval or denial of low-interest loans from AFPs, and comparing it to self-reported quality of life, independence, and employment. Furthermore, this study sought to investigate telework as an alternative to traditional technologies and the overall effectiveness of the Tech Act, the purpose of which is to increase employment and telework opportunities for persons with disabilities by providing assistive technology. This was done by examining telework experience and reported desire to telework as well as employment experience

and reported desire to be employed between groups of persons who listed use of AT and persons who did not list use of AT.

A sample of 155 AFP applicants was examined in this study. These individuals included those whose AFP applications were accepted and denied. The analytic methodology that drove this research was a quantitative analysis. The statistical analyses included cross-tabulations, Spearman's Correlations, Kruskal-Wallis Tests, Likelihood Ratio Chi Square Tests, and Ordered Logistic Regression modeling.

This study found significant relationships and associations between employment and quality of life, required support and whether said support motivated the client to apply for a low-interest loan, goals that motivated the client to apply for a low-interest loan and required support, the desire to be employed and required support, and finally, the desire to be employed and goals that motivated the client to apply for a low-interest loan. All of these relationships and associations were found to be significant at an alpha level of 0.05 using STATA 9.0. These findings were reliable in the sense that the study was powered at 80%. However, the sample size was 155 observations, which is very small for an observational, or descriptive, study. Furthermore, many of the variables contained missing data points. All of the findings should be interpreted with care.

Limitations of the Study

A comprehensive literature review demonstrated the need for research in this arena. Specifically, research on how persons with disabilities viewed their quality of life and independence in terms of employment. The catalyst for this study, and what

differentiated it from other studies, was the investigation of public policy, namely the Tech Act. All of these topics individually had been studied before, but there was little literature available concerning how these topics related to one another. The interest in the Tech Act spawned the idea of tying in telework experience with the aforementioned topics; especially studying telework as a type of employment and a type of AT, which had not been done before. There were few ways to gain access to study populations of persons with disabilities, except for one venue in particular: Alternative Financing Programs. There are 33 AFPs across the U.S. and territories.

The original AFPs that agreed to be a part of this research and give access to their client populations were different from the four that eventually became a part of the finished product, except for one that maintained their participation status from the beginning. Half-way through the study, two of the AFPs decided to withdraw for fear that any negative relationships discovered between persons with disabilities, i.e., their clientele, and lack of employment or access to telework accommodations, would impact their funding. Other AFPs agreed to participate.

The scope of study was initially too large. Telework studies needed to be separated from employment studies, except when specifically studying telework as a type of employment. This study did endeavor to include telework as a type of employment, but was unsuccessful due to the lack of data reported by the respondents. The scope of telework as a type of employment is so large that it warrants its own study agenda. Likewise, employment and telework as separate topics, especially when focused on how persons with disabilities are affected by them, also warrant their own research arenas.

The type of study was descriptive or observational, both of which required a large sample size for proper statistical analyses and power. The limitation in this instance fell on the researcher. With each AFP only serving a few hundred clients each, the assumption that every client would return a survey for quantitative analysis was wrong; even with a hopeful 50% return rate, the study population would still have been too small. With the IRB approval regulations restricting direct access to the AFP clientele, interviews or knowledge of any personal data was prohibited. This left complete dependence on a high return rate, which, in the end, did not lend to appropriate access to the study population.

Several biases were present in this study. As previously mentioned, the design of the study was that of a purely quantitative method. This study should have included qualitative methods, which will be further discussed in later sections. A survey design, although appropriate for quantitative data collection, was not comprehensive enough to collect the appropriate data needed to answer the research questions or hypotheses. This led to information bias. The information collected was not reliable or valid for two reasons: 1) The information was left to the respondent to record, which introduced recall bias, and 2) The survey tool was not worded appropriately for the audience, which introduced response bias. Information bias always lends to reporting bias in that the data reported by the researcher are not really known to be the true data intended to be reported by the respondent. There is no way to know this information without a personal interview, which would have classified this study as qualitative or at least a mixed

methods study, either of which would have been more appropriate than a purely quantitative study.

This study utilized a non-probability sampling of convenience, which resulted in sampling bias. The researcher could only gain limited access to the clientele of AFPs that agreed to be in the study, which does not lend to generalizability to other AFPs. Once the AFPs agreed to participate, research regulations set forth by the IRB at VCU restricted the researcher from gaining any access to personal or identifying information. This meant letting the AFPs draw the sample of clients to be surveyed. Even though strict guidelines were established, said guidelines were broken as sampling was not done correctly. The two guidelines were that no minors receive a survey and no one in the AFP database for longer than two years receive a survey as to avoid expired contact information. More than 70 surveys were returned to the AFPs with expired addresses and 13 minors responded to surveys. Much of the sampling bias could have been avoided with either a different study design or more control allotted to the researcher.

Although validity and reliability are thoroughly addressed in different sections, it is appropriate to label these two items as limitations. The validity and reliability of the survey instrument were poor and the power of the study was marginal at best. The repeatability of this study would be difficult and ill advised.

In the same family as validity and reliability is the limitation of confounding. This was a difficult determination, and not one made statistically. Confounding is largely a threat to validity and, for this study, was apparent. The population being studied consisted of persons with disabilities. Since there was no question on the survey tool to

relate disability type and no identifying information was allotted to the researcher, disability type, mental, physical or emotional disability, of the respondents was unknown. However everyone in the study population had a disability of some type. The confounder was that of the disability, or level of need. This is due to the fact that responses may have been incorrect because of the type of disability of the respondent. Unless future studies record or somehow determine disability type and severity, there will be no way to control for this confounder and the studies in this arena will always suffer from validity issues.

Another issue that contributed to the repeatability of the study was that of instrumentation delivery. The survey instrument was delivered in two ways: first, a paper survey was mailed to everyone in the sample and second, a reminder post card was mailed to the same population with the option to take the same survey online. Only 14 responses were recorded online, which was surprising given the increase in technology and Internet use in our society. Of the 1,090 surveys mailed out, 155 paper surveys were returned. Many questions remain concerning this response: "Did the 155 respondent not have Internet access?" "If so, was that a financial issue or a choice?" "Did the 155 respondents not have the appropriate assistive technology to utilize the Internet?" "Would the 155 respondents have chosen to take the online survey if they had been given the choice first?" To repeat this study in the future, it would be necessary to know the answers to some of these questions in order to reach the population with ease and to ensure that the simplest delivery method is utilized, while ensuring accessibility to all in the study.

The planned statistical analyses for this study presented limitations in several ways. As mentioned earlier, the return rate for this study was much lower than expected. When planning the analyses, a larger sample size was used to determine which statistical tests would be performed. The statistics that had to be implemented were very different from the ones that were planned. The planned analyses included parametric tests and the actual analyses were non-parametric.

Although non-parametric tests are sound, they are more robust and less precise. However, when non-parametric analyses are calculated with non-random missing data, sampling and reporting bias, and confounding of the ability of the sample population, even the best statistical examination cannot reveal true relationships or find effects. Of these limitations, statistically, missing data is of the most concern. There were three types of missing data in this study: 1) Missing completely at random; 2) Missing at random; and 3) Non-random missing data. Many of the variables had over 100 missing observations (N=155), some of which were from all three of the aforementioned categories. A study with one type of missing data may be able to statistically control for any confounding or effect modification, but a study with all three types of missing data creates a significant problem statistically. Although statistically significant relationships and associations were found in the study, they were not reliable.

This study can only be generalized to a very small portion of AFP clientele, namely the ones from the four AFPs that participated in the study. Due to the fact that so little was learned of the four AFP populations, little can be related to other AFP populations across the U.S. and territories except for the fact that they are all AFP clients.

This fact is less significant than the fact that nothing was learned of the nature of the disabilities of the AFP clients surveyed. The conclusions in this study cannot be generalized to other populations of persons with like disabilities because said disabilities remain unknown. Although applauding results were not obtained during the course of this research, the many limitations serve as a guideline for future studies in this arena.

Discussion

Assistive Technology Use

This study did not address specific types of assistive technologies. Instead, it focused on what aspects of the respondent's life the assistive technologies were used to improve or enhance. It attempted to find a connection between employment, quality of life, independence, and telework with assistive technologies. In the end, there was little to no statistically significant relationships between them. It is difficult to distinguish whether these results were found due to the nature of the data in this study or if this conclusion is truly in support of the literature. As discussed in Chapter 2, "the use of assistive technologies can potentially hinder the ability of a person with a disability to become employed and become fully integrated with the labor force and society at large." (Inge, 2006)

Motivations of AFP Clients

Motivations, as they were defined in this study, were stated as goals or reasons why AFP clients chose to apply for a low-interest loan. Motivations were also defined as

a reason to apply for a low-interest loan as a result of required support. Statistically significant relationships were found for both types of motivations. Significant associations were found between AFP client's required physical, emotional, and financial supports and that being the motivation to apply for a low-interest loan. This is not a surprising relationship for three reasons: 1) the questions were logistically located next to one another; 2) it stands to reason that if an AFP applicant is willing to admit that he or she needs physical, emotional, or financial support that they would also admit that requiring that support motivated them to apply for a low-interest loan; and 3) the interpretation of the relationship of the variables makes sense. If a low-interest loan could alleviate the burden of requiring someone's help, then the next natural thought is that a loan application would follow.

Other motivations in this study were discussed as goals for motivating one to apply for a low-interest loan. Significant associations were found with several of the goals and required support and desire to telework. The most common goals that motivated loan application were self care and the want to care for others, however, independence and the desire to telework were included on that list. The literature states that employees with disabilities are often denied access to public transportation due to their disabilities, found the use of public transportation extremely difficult, or were located prohibitively far from bus or train stations, all of which prevented them from maintaining employment. It stands to reason that if the goals that motivated AFP applicants to apply for a low-interest loan were statistically significantly associated with

the desire to telework, the aforementioned problem would cease to exist for those who could work from home.

Independence in the Home and Community

This study aimed to find relationships between quality of life, employment, telework, required supports, and the use of assistive technologies with independence at home and in the community. No statistically significant relationships were found. Short, Vasey, and Tunceli (2005) investigated the effect of disabilities on employment, quality of life, and independence in the home and community, and discovered interactions between quality of life and employment. Although this finding, or lack thereof, supports the literature, it was the aim of this study to differentiate between the literature and undiscovered relationships. To that effect, this study failed and leaves opportunity for future studies to discover said relationships with independence at home and in the community.

Quality of Life

Quality of life was found to be statistically significantly associated with the desire to be employed as well as the desire to telework. This relationship is significant due to the fact that it is one of the few this study differentiated from the current body of literature. Kober & Eggleton (2005) reported that persons with disabilities in general have been shown to have, on average, a lower self-reported quality of life than persons who are not diagnosed with disabilities. Although this statement from the literature does

not address quality of life in terms of desire to be employed or desire to telework, it does state that persons with disabilities generally report lower self-reported quality of life scores. In this study, it was found that quality of life was higher for those AFP applicants who desired to be employed or to telework. This means that these clients are not employed, are not teleworking, do have disabilities (by default of inclusion in the study population), but still have higher quality of life scores than other persons with disabilities who are AFP client who do not want to work or telework.

Employment

This study found two statistically significant relationships between quality of life and goals that motivated AFP applicants to apply for a low-interest loan with employment. The goals that were found to be significantly associated with employment were self care, care for others, the want to enhance quality of life, and the want to increase the chances of finding a job. These associations were supported throughout this study and remain significant findings, as one of the aims of this study was to discover a significant association between employment and quality of life.

Telework

During the course of this study, telework was extensively examined in the literature as well as in the analyses of the data collected from AFP applicants. Several statistically significant relationships were found between goals that motivated AFP applicants to apply for a low-interest loan and the desire to telework. Specifically, the goals that motivated loan application were care for others, independence, the want to

participate in recreational activities, increased chances of finding a job, the desire to telework, and the desire to start their own business. These significant associations support the literature which states that telework provides alternative routes for enabling more individuals with disabilities to enter the workforce or to increase their level of involvement and earnings. It also states that telecommuting provides an important opportunity for employees with disabilities to continue working for a company without being in a work environment that is not as conducive to the nature of the disability as the home environment. The findings in this study do support these latter statements in that increased independence would enable persons with disabilities to become more involved in their workplace, starting one's own business, and teleworking would increase the chances of finding a job.

Technology-Related Assistance for Individuals with Disabilities Act

The goals of the Technology-Related Assistance for Individuals with Disabilities act of 1988 (the Tech Act) were to: 1) Increase awareness of the needs of individuals with disabilities for assistive technology devices and services; 2) increase awareness of policies and procedures that facilitate or impede the acquisition of assistive technology; 3) improve the availability of and funding for assistive technology; 4) expand the knowledge of efficient applications of assistive technology devices and services; and 5) promote coordination among state agencies and public and private entities that provide assistive technology devices and services. Of these goals, this study focused on the third, through AFPs.

One of the objectives not specifically addressed by the Tech Act, but implied in the Congressional findings, was to assist persons with disabilities through assistive technology to improve community living. This study did address independence in the community for persons with disabilities, but found no statistically significant associations between independence at home or in the community with any of the other variables in the study.

This study also aimed to address the Tech Act using statistics calculated with data from this study. Increased access to assistive technology, as it is stated in the Tech Act, is a very broad goal. The entire aim of the AFPs is to increase access to assistive technology for persons with disabilities. This study did not find any differences in the population of people who listed use or access to assistive technology and those who did not list use or access to assistive technology. Although one study cannot manage to engage the goals of such a comprehensive public policy, it can add to the literature, which eventually accumulates support to that effect.

This study also aimed to seek a relationship between employment and use of assistive technologies, which were measured via AFP loan approval. The purpose of this investigation was to examine integration into the workforce and whether AFPs were a catalyst or a hindrance to this end. It is safe to say that AFPs increase access to the workforce by providing low-interest loans to persons with disabilities who seek assistive technology as a key to unlock the door to employment.

Recommendations for Future Studies

This study was purely quantitative, but should have been a mixed methods study, if not a purely qualitative study. As stated earlier: collecting data from a population of persons with disabilities, while not knowing what those disabilities entail, was a limitation and introduced bias into the study. Semi-structured interviews would serve as a better method for collecting data and would allow the researcher to take time and utilize the appropriate method to communicate the questions. This would lead to valid answers. In the event that a survey tool had to be introduced, follow-up interviews or phone calls would be essential in assuring data quality. Requiring quantitative data from a group of respondents creates the assumption that the researcher has created a clear and concise survey tool. These assumptions cannot be afforded in any study, especially a study where the respondents have unknown disabilities as well as unknown accesses to technology and assistance. This being said, online survey tools would not be necessary in future studies.

Another recommendation for method of study is that of a cohort study or community trial study. Community trial studies are good studies for testing the efficacy of public policy. If public policy were to remain part of this study in the future, this would be a more fitting study method. A cohort study would also be a good way of measuring the uses of assistive technology, independence in the home and community, and quality of life in terms of employment. Employment could be followed for the study population and as clients are employed, they would "drop" out of the study. Survival analyses could be utilized to statistically estimate the determination of "risk." In the

event that the latter suggestion is followed, the study should be split between employment and telework. Studying both "types of employment" simultaneously would be confusing in this instance, as it was quantitatively. The respondent was confused by the difference in employment and telework and mixing the two made statistical analyses difficult and interpretation of the data even more difficult.

The next recommendation comes in the form of rapport. It was very difficult to create the appropriate rapport with the AFPs due to the fact that there was little contact via phone and no contact in person. Working with the AFPs was essential to reach the untapped research population, but it might have been easier to build rapport, trust and understanding of the study had relationships been developed in person. This would have decreased sampling bias and guaranteed exclusion criteria were met due to the fact that the researcher could have conveyed the aims of the study as well as the research guidelines set forth by the IRB.

Further recommendations come in the form of knowing the population being sampled. As mentioned earlier, the population of AFP applicants was only known to this study as just that, AFP applicants. There was no identifying information or personal information divulged at any point in time, which contributed to confounding. If only the type of disability or "ability level" of the respondent had been known, confounders could have been controlled for and further statistical assessments could have been made to gain a better understanding of how and why questions were answered in the manner that they were. For example, someone with a physical disability may answer a research question differently from someone with a mental or emotional disability. Knowing this

information would be powerful in the sense that inclusions and exclusions of certain data could be made intelligently for a more sound analysis.

The last recommendation for future studies focuses on the research questions and hypotheses posited in the study. The research questions were too broad and needed many more survey questions to address them (for increased reliability) than could be asked of the respondents in this study. The assumptions that the research questions made as well as the assumptions the hypotheses made need to be refined and made much more conservative in the future. If the assumptions are refined, then fewer survey questions would be needed to address the research questions to ensure reliability. If the research questions, and by default the survey questions are refined, the variables in turn would become more precise and accurate increasing reliability and validity. The variables need to be better defined in terms of what, exactly, is being studied. Many of the respondents misunderstood what the questions were asking and therefore misunderstood how to answer. For example, many respondents misunderstood the definition of assistive technology and when asked if they applied for a loan for AT, they marked "no." Later in the survey they replied with what types of AT they used and marked "other" for type of AFP loan. Clearly, they applied for a low-interest loan for AT, were accepted, purchased said AT and were using it. The misunderstanding could have happened at any point in the questioning, however, a clear definition would circumvent these types of issues.

Recommendations for AFPs

Although this study presented many limitations and thus, recommendations for future studies, there are few recommendations for the AFPs. One recommendation would be to collect more information on AFP clients designed for research purposes. This information could be housed in a separate database as not to intervene with the loan application process. To take it further, the client could be prompted to sign a waiver agreeing to release certain non-identifying information for research purposes, or agree to be interviewed. This being said, AFP directors would have to become more comfortable with the research process and potentially open their doors to researchers.

AFP directors, and employees, have a special opportunity to contribute to further research on these topics due to their familiarity and rapport with their clientele. In any relationship where there is established rapport, there is an opportunity to utilize that familiarity, and in this instance, contribute to the research arena. This, of course, can only be done with supplemental funding. However, this is a very rich, and untapped, research population which has the potential to produce robust amounts of data, much of which is not represented in the literature.

Summary

This study enhances our knowledge of Alternative Financing Programs and the assistance they provide persons with disabilities. It cannot be concluded that use of assistive technology increases quality of life, but it can be concluded, according to this

study, that quality of life is increased for persons with disabilities who are employed. This study also found that persons with disabilities who enjoy more independence at home and in the community have a higher self-reported quality of life. Although those are not the only statistically significant associations uncovered in the analyses of this study, they are the two most important over-arching themes as they pertain to the original aims of this study.

The valuable knowledge obtained from this study is an important contribution to the scholarly literature of assistive technology use, employment, telework, independence, and quality of life for persons with disabilities who are Alternative Financing Program applicants. The researcher learned a great deal about this population, not only from the resulting data and findings, but from the process that lead to said findings. In fact, more was learned from the process of this study than the study provided statistically.

Undoubtedly, this study was less about the academic process and scientific method than it was about the Alternative Financing Program applicants who participated. Essentially, four Alternative Financing Programs trusted the researcher enough to expose the inner workings of their businesses and grant access to their populations of persons with disabilities. This depth of communication and trust is the genesis of bridging the gap between public policy and academic research, which will lead to discoveries to inevitably help persons with disabilities. Without the help of the Alternative Financing Programs, this study would not have come to fruition, however, without the courage and dedication of the Alternative Financing Program applicants, research in this arena would become stagnant.

While this study did not accomplish all of the goals or answer all of the questions of the researcher, it still shows that the policies that are in place to assist persons with disability are targeting effectively. They seek to provide assistance so that persons with disabilities may work, improve independence, and, overall, improve their quality of life.

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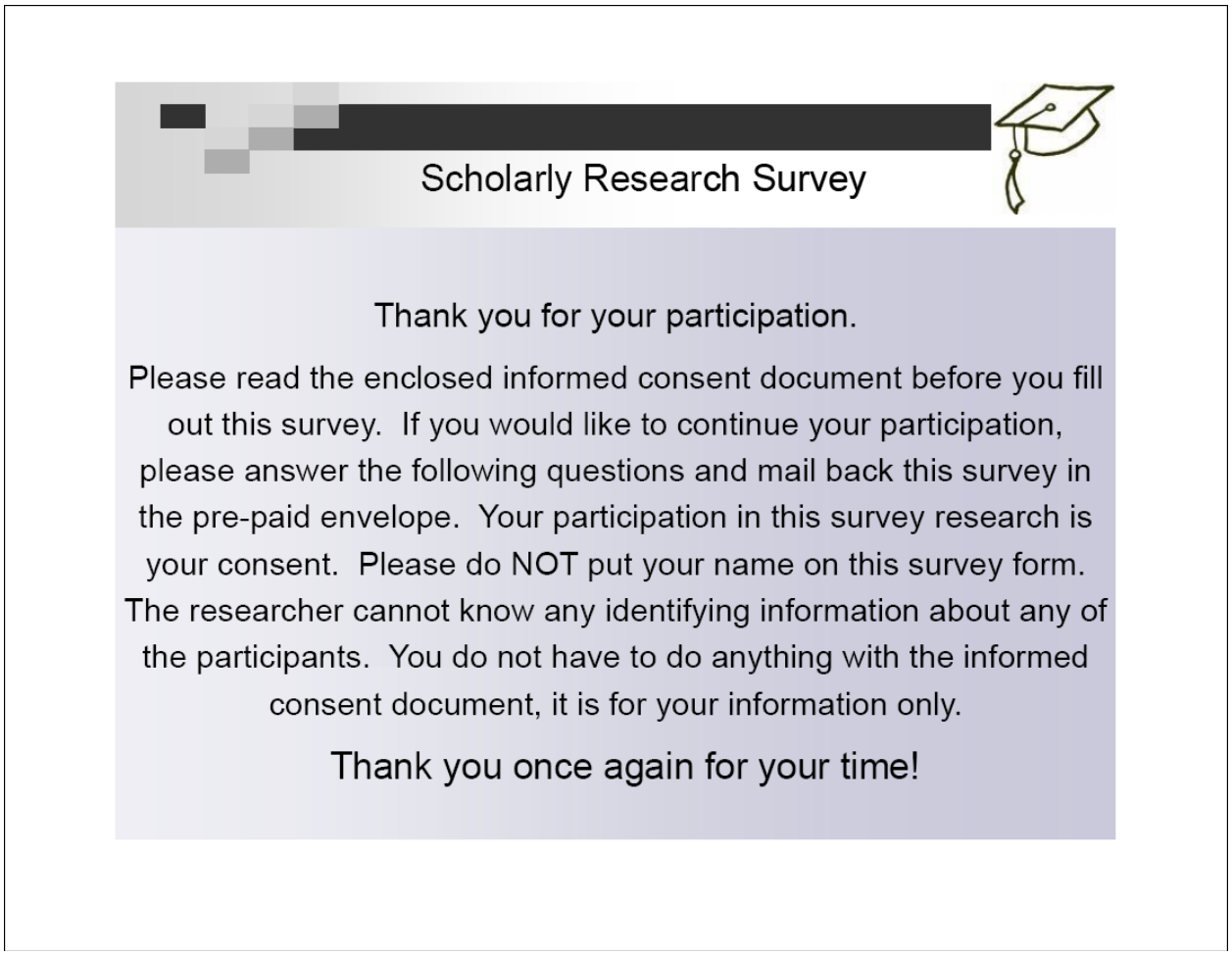
APPENDIX A

Survey Instrument (Paper Booklet)



APPENDIX A: Continued

Survey Instrument (Paper Booklet)

SOME DEFINITIONS FOR REFERENCE:

Alternative Financing Program (AFP): This is the program from which you requested a loan. You may recognize your loan program as:

- The NewWell Fund (ATLFA);
- Easter Seals Nebraska;
- Kansas Assistive Technology Cooperative (KATCO); or
- The Center for Financial Independence & Innovation.

Assistive Technology (AT): Assistive technology comes in the form of wheelchairs, scooters, durable medical equipment, home modifications such as roll-in showers, ramps, vehicle modifications such as hand controls or lowered floors, talking watches, Braille note-takers, and computer software that speaks aloud. These are examples and are not all inclusive.

Telework: Defined as alternative working arrangements for employees where physical location is at home or somewhere other than a main office. It is also a restructuring of the tasks to be accomplished within a larger work setting which could result in 'work' being done remotely using information communication technologies.

Employment: Employment is defined as the agreement between an employee and an employer, whereby the employee conducts work by the direction of the employer and is paid for his or her services. For those individuals seeking telework loans or assistive technology loans to become self-employed, employment is defined as seeking paid work by teleworking, becoming self-employed, owning your own business, independent contract work or any agreement entered with another individual that will result in paid work.

APPENDIX A: Continued

Survey Instrument (Paper Booklet)

What type of low-interest loan did you apply for?	Were you approved for the loan?			
	Yes	No	Pending	N/A
Loan for Assistive Technology				
Telework Loan				
Self-Employment Loan				
Self-Employment Loan to Telework				
Other				

If your loan was for Assistive Technology, what did you want to purchase?	Does Not Apply. My loan was NOT for Assistive Technology. Check Here ☐

List Assistive Technology ⇩ Below ⇩	Would this AT Enhance your Quality of Life?		Would this AT Give You Independence at Home?		Would this AT Give You Independence in your community?		Would this AT Increase your Ability to Work?	
	Yes	No	Yes	No	Yes	No	Yes	No

APPENDIX A: Continued

Survey Instrument (Paper Booklet)

Do You Require:	From Whom?	Check All That Apply				Did this motivate you to apply for a low-interest loan?		
		Never	Sometimes	Frequently	Continuously	Yes	No	N/A
Physical Support? (Dressing, bathing, transportation, etc.)	Family Members							
	Friends							
	Others							
Emotional Support? (Encouragement, coping, etc.)	Family Members							
	Friends							
	Others							
Financial Support? (Help with living expenses, etc.)	Family Members							
	Friends							
	Others							

Has your disability hindered you from finding employment?	
	Yes
	No
	Pending Status
	I have not attempted to obtain employment
	Does Not Apply
	Other

Please Share your Employment Status: *(Check All That Apply)*	Before Applying for a Low-Interest Loan			After Applying for a Low-Interest Loan		
	Yes	No	N/A	Yes	No	N/A
Employed						
Employed, but looking for a job						
Waiting to hear back about a job						
Not employed, but looking for a job						
Not employed, NOT looking for a job						

APPENDIX A: Continued

Survey Instrument (Paper Booklet)

Please Share your Telework Experience: *(Check All That Apply)*	**Before Applying for a Low-Interest Loan**			**After Applying for a Low-Interest Loan**		
	Yes	No	N/A	Yes	No	N/A
Unaware that telework existed						
Interested in telework						
Need assistive technology to telework						
Too difficult to obtain a telework position						
Other						

What goals motivated you when applying for a low-interest loan?	
Check All That Apply	
	Self-Care (i.e., personal hygiene, cooking, errands, doctors' appointments, therapy, etc.)
	Care for others (i.e., parents, children, roommate)
	Independence
	Enhance quality of life
	Participate in recreational activities (i.e., wheelchair basketball, hiking, fishing, etc.)
	Enhance my social life
	Increased chances of finding a job
	I want to telework
	I want to start my own business
	Other

APPENDIX A: Continued

Survey Instrument (Paper Booklet)

If you had to rate your Quality of Life, where would you consider yourself on this scale?					
Please Circle Your Answer	Very Poor	Poor	Indifferent	Good	Excellent
	1	2	3	4	5

Rate your independence level at home:					
Please Circle Your Answer	Not Independent	Somewhat Independent	Neutral	Very Independent	Extremely Independent
	1	2	3	4	5

Rate your independence level in your community:					
Please Circle Your Answer	Not Independent	Somewhat Independent	Neutral	Very Independent	Extremely Independent
	1	2	3	4	5

Rate your ability to work:					
Please Circle Your Answer	Not Able	Somewhat Able	Neutral	Very Able	Extremely Able
	1	2	3	4	5

APPENDIX A: Continued

Survey Instrument (Paper Booklet)

Rate your desire to be employed:					
Please Circle Your Answer	No Desire	Somewhat Desire	Neutral	Very Desirable	Extreme Desire
	1	2	3	4	5

Rate your desire to telework:					
Please Circle Your Answer	Do Not Desire	Somewhat Desire	Neutral	Very Desirable	Extreme Desire
	1	2	3	4	5

Please Circle Your Answers						
Gender:	Female	Male	Your **Age** Today_____			
Education:	Less than High School	High School	Associate's	Bachelor's	Master's or Higher	Other_____

Thank You! Please return this survey in the pre-paid envelope enclosed. Again, your participation in this survey is appreciated and will help further our research. Any published data will in no way be linked to any one person who filled out this questionnaire. My sincere thanks, Amy Davis.

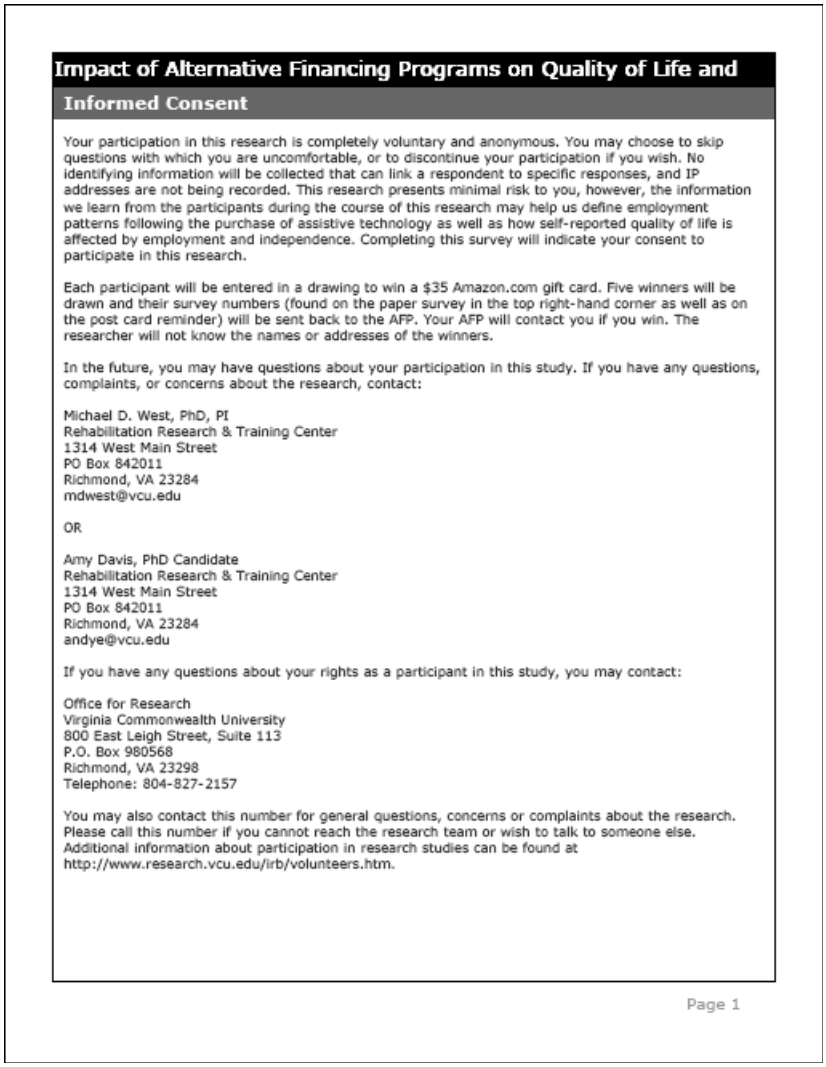
APPENDIX B

Original Version of Survey Question 1

Assistive Technology	I Use This	I Want This	Enhances my Quality of Life 1 = Not At All 5 = Very Much	This AT Provides More Opportunities for:			Does this AT Give You Independence in your:		Does this AT Increase your Ability to Work?		Have you been Employed since using this AT?		
	Check Box if Applicable		(Circle One)	Recreational Activities	Social Networking	Teleworking	Home	Community	Yes	No	Yes	No	N/A
			1 2 3 4 5	Check All That Apply									
Architectural Access													
Stair Lift			1 2 3 4 5										
Ramps			1 2 3 4 5										
Communication													
Voice Amplification System			1 2 3 4 5										
Reading Machines			1 2 3 4 5										
Computer Use													
Eye-Tracking Software			1 2 3 4 5										
Voice Recognition System			1 2 3 4 5										
Health/Medical Equipment													
Diabetic Supplies			1 2 3 4 5										
Pressure Monitors			1 2 3 4 5										
Hearing Technology													
Alert/Signal Systems			1 2 3 4 5										
TDDs/TTYs			1 2 3 4 5										
Orthotics													
Braces/Supports			1 2 3 4 5										
Prosthetics			1 2 3 4 5										
Mobility													
Electronic Recliner			1 2 3 4 5										
Powered Wheelchair			1 2 3 4 5										
Recreation													
Sports Equipment			1 2 3 4 5										
Fishing/Hunting Equipment			1 2 3 4 5										
Therapeutic Aids													
Ambulation Training			1 2 3 4 5										
Hydrotherapy			1 2 3 4 5										
Transportation													
Vehicle Conversions			1 2 3 4 5										
Wheelchair Loaders			1 2 3 4 5										

APPENDIX C

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Informed Consent

Your participation in this research is completely voluntary and anonymous. You may choose to skip questions with which you are uncomfortable, or to discontinue your participation if you wish. No identifying information will be collected that can link a respondent to specific responses, and IP addresses are not being recorded. This research presents minimal risk to you, however, the information we learn from the participants during the course of this research may help us define employment patterns following the purchase of assistive technology as well as how self-reported quality of life is affected by employment and independence. Completing this survey will indicate your consent to participate in this research.

Each participant will be entered in a drawing to win a $35 Amazon.com gift card. Five winners will be drawn and their survey numbers (found on the paper survey in the top right-hand corner as well as on the post card reminder) will be sent back to the AFP. Your AFP will contact you if you win. The researcher will not know the names or addresses of the winners.

In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Michael D. West, PhD, PI
Rehabilitation Research & Training Center
1314 West Main Street
PO Box 842011
Richmond, VA 23284
mdwest@vcu.edu

OR

Amy Davis, PhD Candidate
Rehabilitation Research & Training Center
1314 West Main Street
PO Box 842011
Richmond, VA 23284
andye@vcu.edu

If you have any questions about your rights as a participant in this study, you may contact:

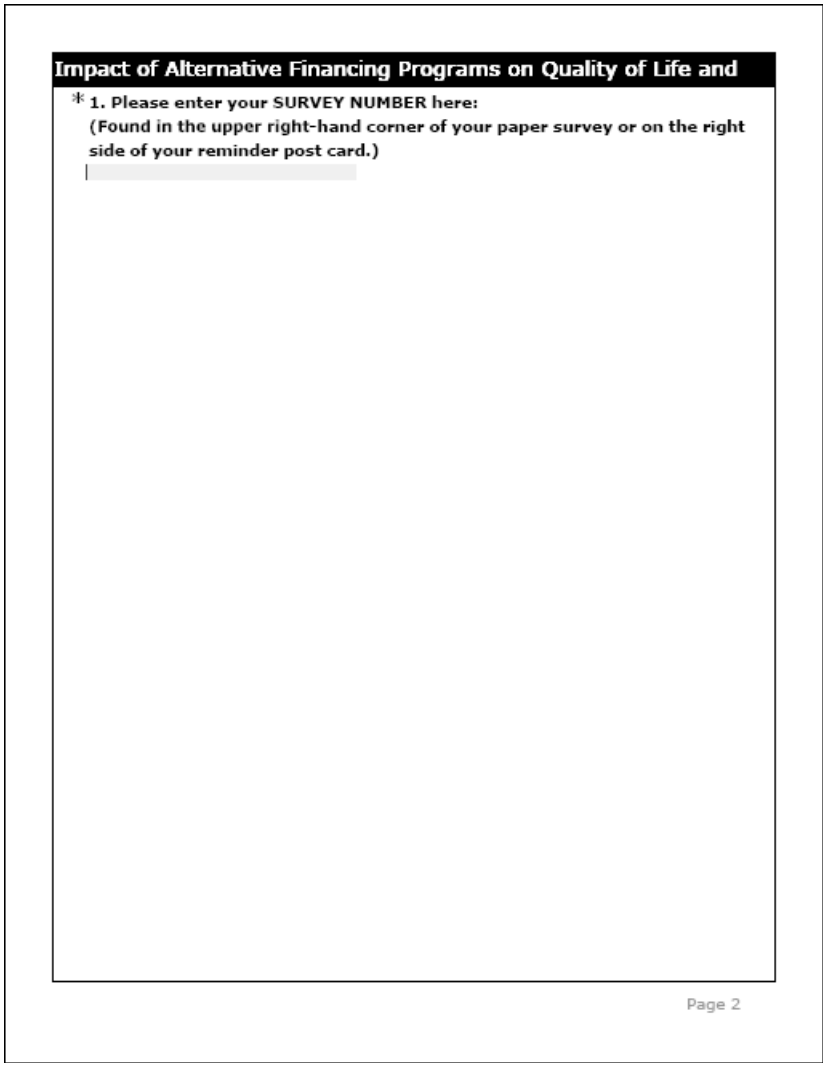
Office for Research
Virginia Commonwealth University
800 East Leigh Street, Suite 113
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-827-2157

You may also contact this number for general questions, concerns or complaints about the research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm.

Page 1

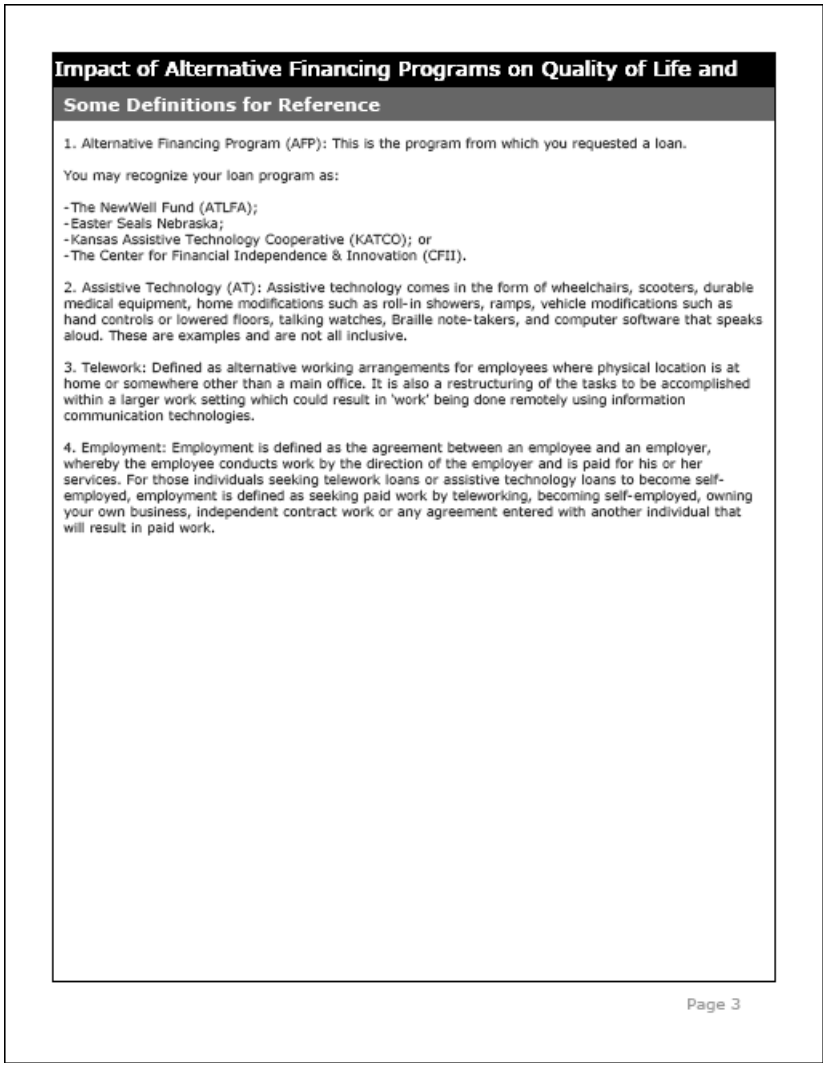
APPENDIX C: Continued

Online Version of Survey Tool



APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Some Definitions for Reference

1. Alternative Financing Program (AFP): This is the program from which you requested a loan.

You may recognize your loan program as:

- The NewWell Fund (ATLFA);
- Easter Seals Nebraska;
- Kansas Assistive Technology Cooperative (KATCO); or
- The Center for Financial Independence & Innovation (CFII).

2. Assistive Technology (AT): Assistive technology comes in the form of wheelchairs, scooters, durable medical equipment, home modifications such as roll-in showers, ramps, vehicle modifications such as hand controls or lowered floors, talking watches, Braille note-takers, and computer software that speaks aloud. These are examples and are not all inclusive.

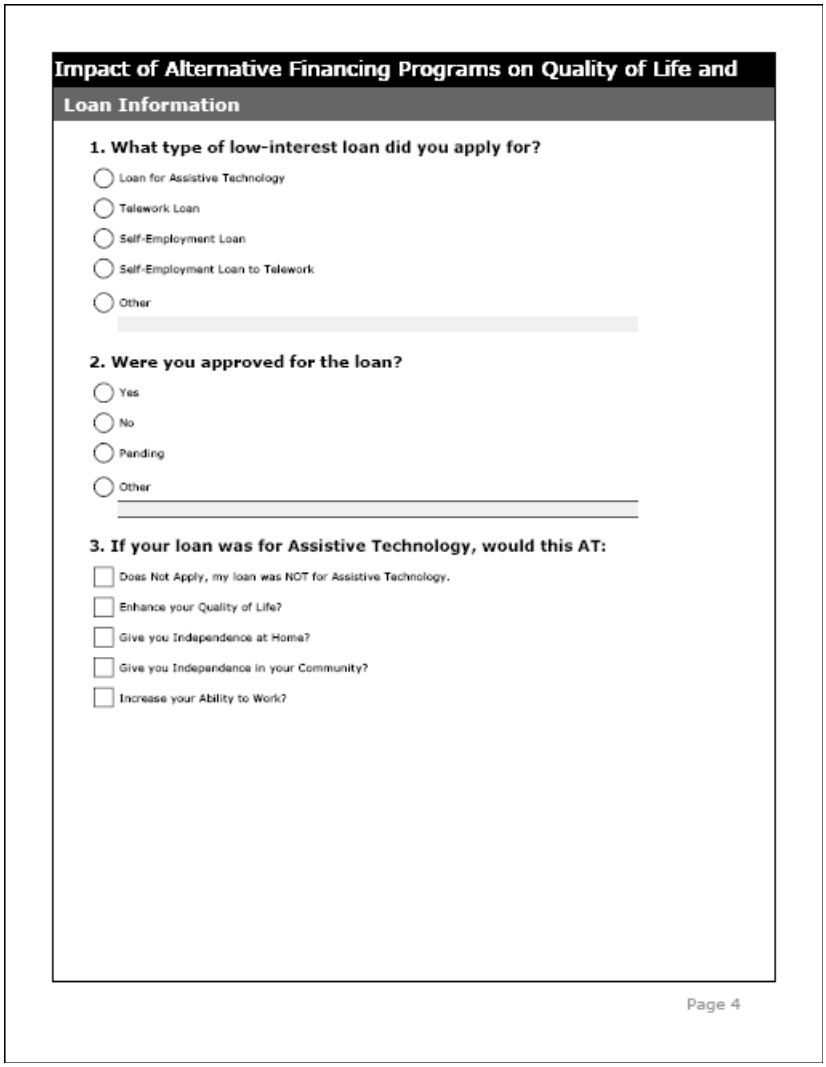
3. Telework: Defined as alternative working arrangements for employees where physical location is at home or somewhere other than a main office. It is also a restructuring of the tasks to be accomplished within a larger work setting which could result in 'work' being done remotely using information communication technologies.

4. Employment: Employment is defined as the agreement between an employee and an employer, whereby the employee conducts work by the direction of the employer and is paid for his or her services. For those individuals seeking telework loans or assistive technology loans to become self-employed, employment is defined as seeking paid work by teleworking, becoming self-employed, owning your own business, independent contract work or any agreement entered with another individual that will result in paid work.

Page 3

APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Loan Information

1. What type of low-interest loan did you apply for?

- ◯ Loan for Assistive Technology
- ◯ Telework Loan
- ◯ Self-Employment Loan
- ◯ Self-Employment Loan to Telework
- ◯ Other

2. Were you approved for the loan?

- ◯ Yes
- ◯ No
- ◯ Pending
- ◯ Other

3. If your loan was for Assistive Technology, would this AT:

- ☐ Does Not Apply, my loan was NOT for Assistive Technology.
- ☐ Enhance your Quality of Life?
- ☐ Give you Independence at Home?
- ☐ Give you Independence in your Community?
- ☐ Increase your Ability to Work?

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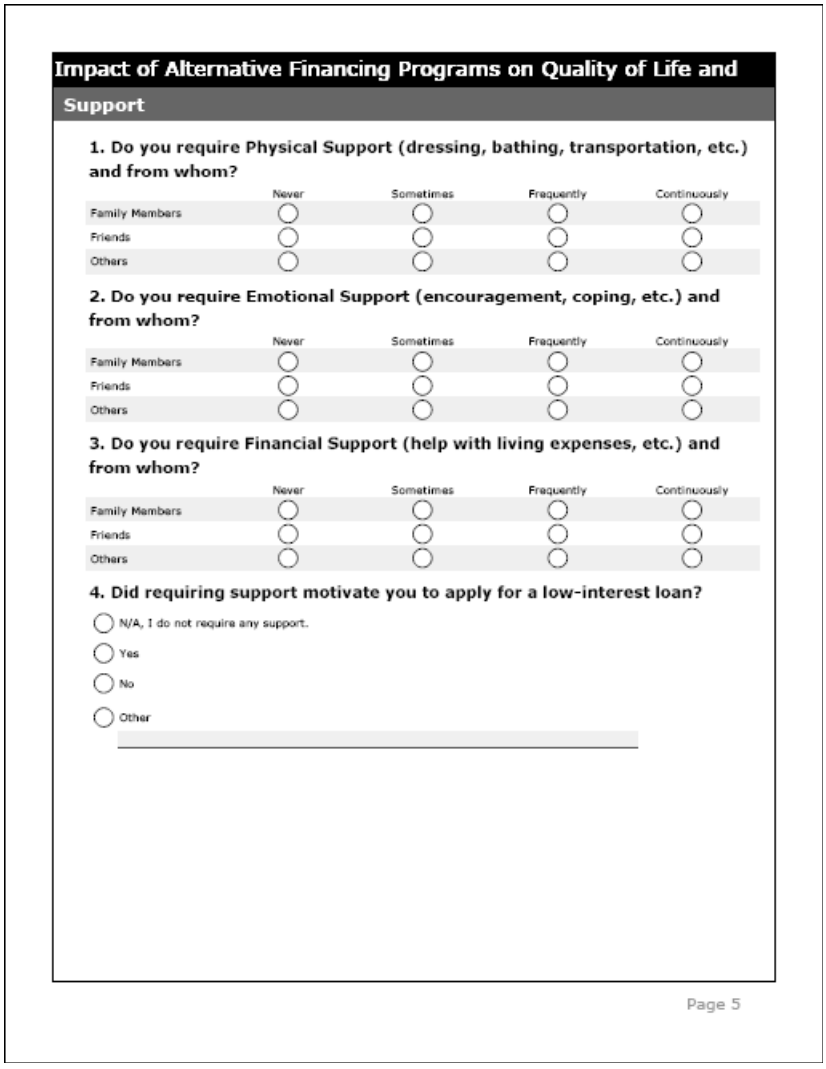
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and Support

1. Do you require Physical Support (dressing, bathing, transportation, etc.) and from whom?

	Never	Sometimes	Frequently	Continuously
Family Members	◯	◯	◯	◯
Friends	◯	◯	◯	◯
Others	◯	◯	◯	◯

2. Do you require Emotional Support (encouragement, coping, etc.) and from whom?

	Never	Sometimes	Frequently	Continuously
Family Members	◯	◯	◯	◯
Friends	◯	◯	◯	◯
Others	◯	◯	◯	◯

3. Do you require Financial Support (help with living expenses, etc.) and from whom?

	Never	Sometimes	Frequently	Continuously
Family Members	◯	◯	◯	◯
Friends	◯	◯	◯	◯
Others	◯	◯	◯	◯

4. Did requiring support motivate you to apply for a low-interest loan?

◯ N/A, I do not require any support.

◯ Yes

◯ No

◯ Other

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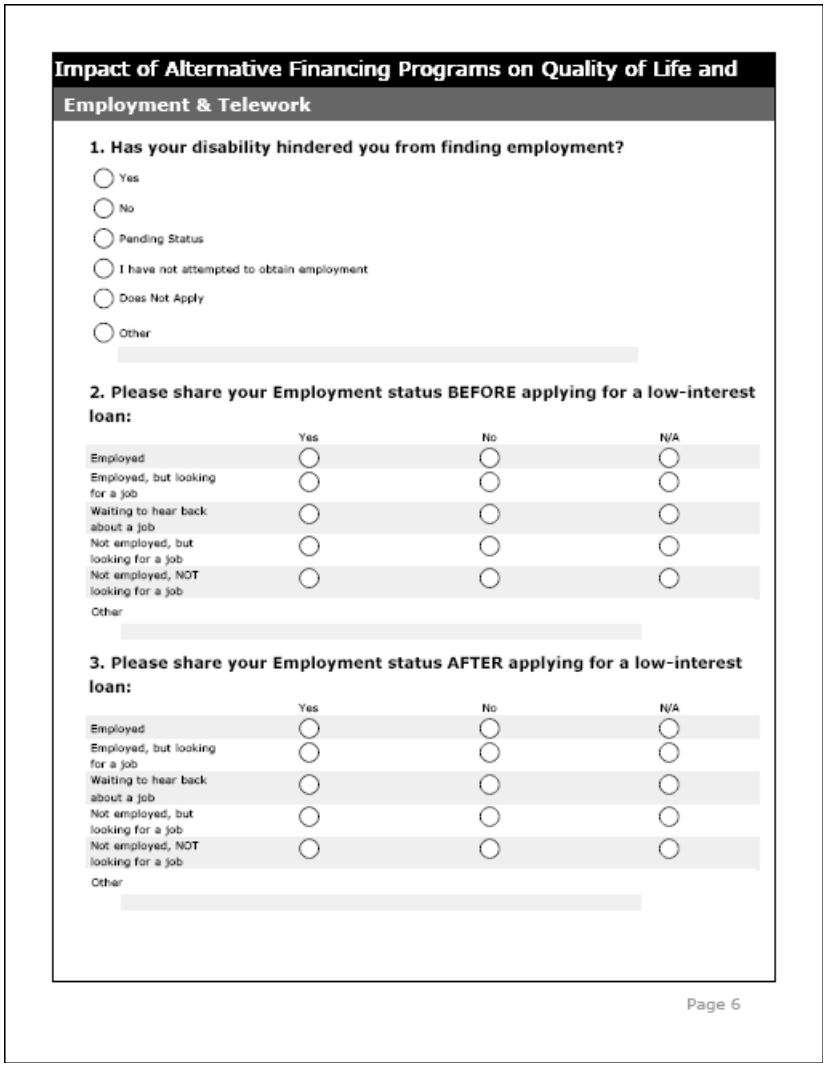
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and Employment & Telework

1. Has your disability hindered you from finding employment?

- ◯ Yes
- ◯ No
- ◯ Pending Status
- ◯ I have not attempted to obtain employment
- ◯ Does Not Apply
- ◯ Other

2. Please share your Employment status BEFORE applying for a low-interest loan:

	Yes	No	N/A
Employed	◯	◯	◯
Employed, but looking for a job	◯	◯	◯
Waiting to hear back about a job	◯	◯	◯
Not employed, but looking for a job	◯	◯	◯
Not employed, NOT looking for a job	◯	◯	◯

Other

3. Please share your Employment status AFTER applying for a low-interest loan:

	Yes	No	N/A
Employed	◯	◯	◯
Employed, but looking for a job	◯	◯	◯
Waiting to hear back about a job	◯	◯	◯
Not employed, but looking for a job	◯	◯	◯
Not employed, NOT looking for a job	◯	◯	◯

Other

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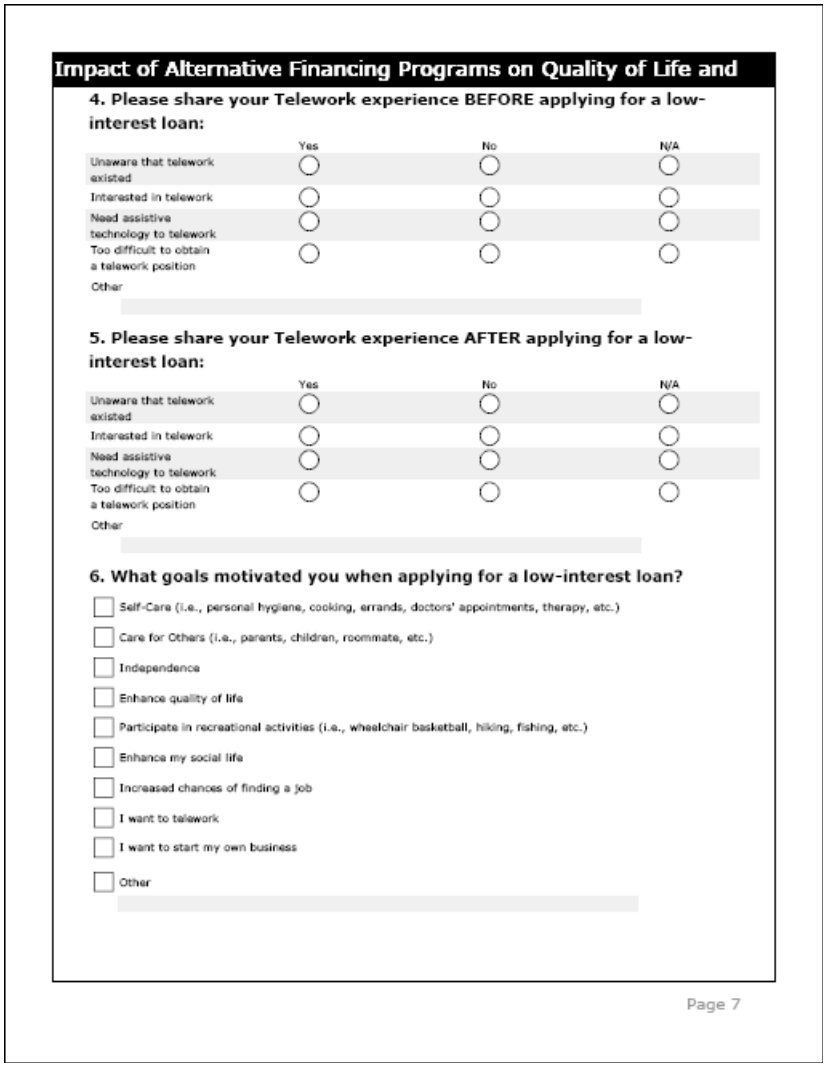
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

4. Please share your Telework experience BEFORE applying for a low-interest loan:

	Yes	No	N/A
Unaware that telework existed	○	○	○
Interested in telework	○	○	○
Need assistive technology to telework	○	○	○
Too difficult to obtain a telework position	○	○	○

Other

5. Please share your Telework experience AFTER applying for a low-interest loan:

	Yes	No	N/A
Unaware that telework existed	○	○	○
Interested in telework	○	○	○
Need assistive technology to telework	○	○	○
Too difficult to obtain a telework position	○	○	○

Other

6. What goals motivated you when applying for a low-interest loan?

- ☐ Self-Care (i.e., personal hygiene, cooking, errands, doctors' appointments, therapy, etc.)
- ☐ Care for Others (i.e., parents, children, roommate, etc.)
- ☐ Independence
- ☐ Enhance quality of life
- ☐ Participate in recreational activities (i.e., wheelchair basketball, hiking, fishing, etc.)
- ☐ Enhance my social life
- ☐ Increased chances of finding a job
- ☐ I want to telework
- ☐ I want to start my own business
- ☐ Other

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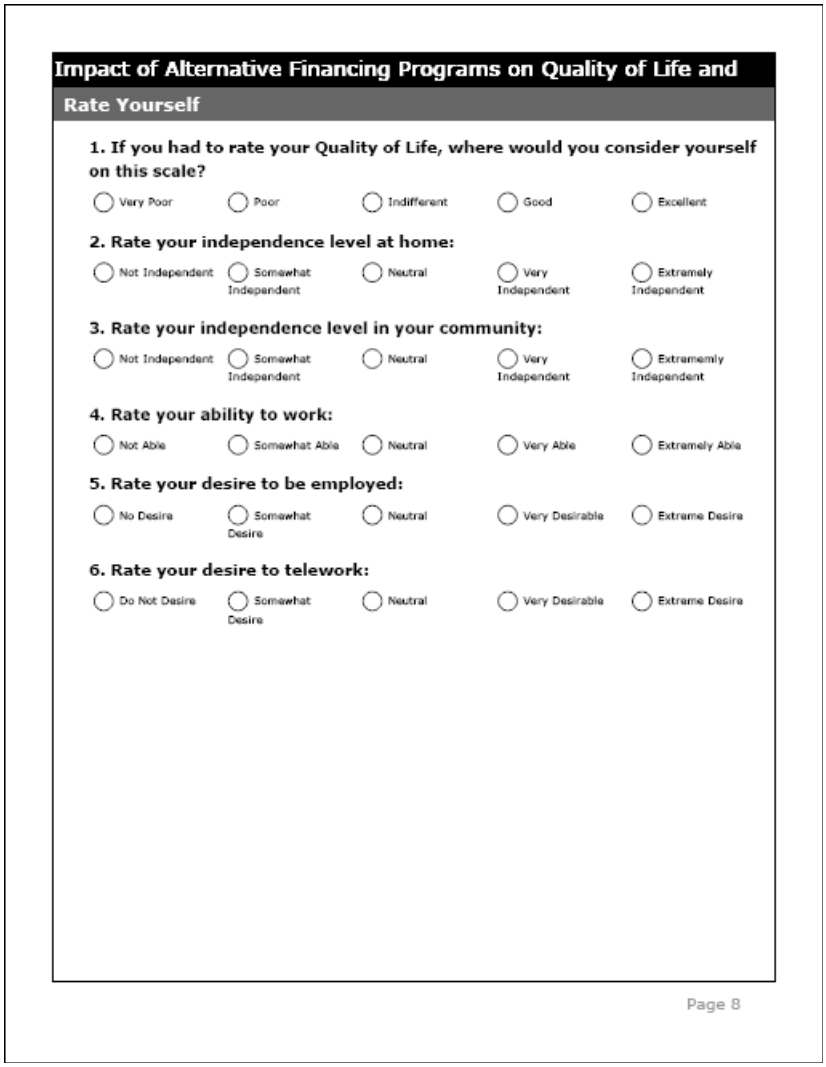
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Rate Yourself

1. If you had to rate your Quality of Life, where would you consider yourself on this scale?

◯ Very Poor ◯ Poor ◯ Indifferent ◯ Good ◯ Excellent

2. Rate your independence level at home:

◯ Not Independent ◯ Somewhat Independent ◯ Neutral ◯ Very Independent ◯ Extremely Independent

3. Rate your independence level in your community:

◯ Not Independent ◯ Somewhat Independent ◯ Neutral ◯ Very Independent ◯ Extrememly Independent

4. Rate your ability to work:

◯ Not Able ◯ Somewhat Able ◯ Neutral ◯ Very Able ◯ Extremely Able

5. Rate your desire to be employed:

◯ No Desire ◯ Somewhat Desire ◯ Neutral ◯ Very Desirable ◯ Extreme Desire

6. Rate your desire to telework:

◯ Do Not Desire ◯ Somewhat Desire ◯ Neutral ◯ Very Desirable ◯ Extreme Desire

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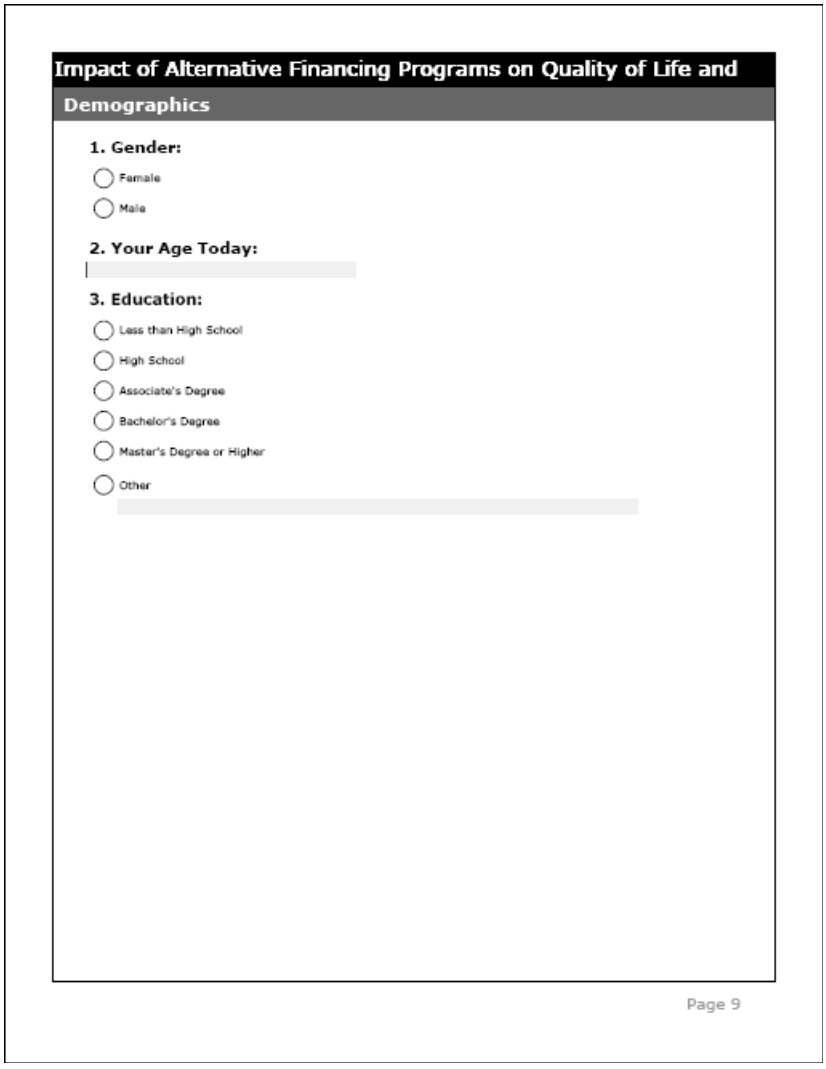
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Demographics

1. Gender:

- ◯ Female
- ◯ Male

2. Your Age Today:

3. Education:

- ◯ Less than High School
- ◯ High School
- ◯ Associate's Degree
- ◯ Bachelor's Degree
- ◯ Master's Degree or Higher
- ◯ Other

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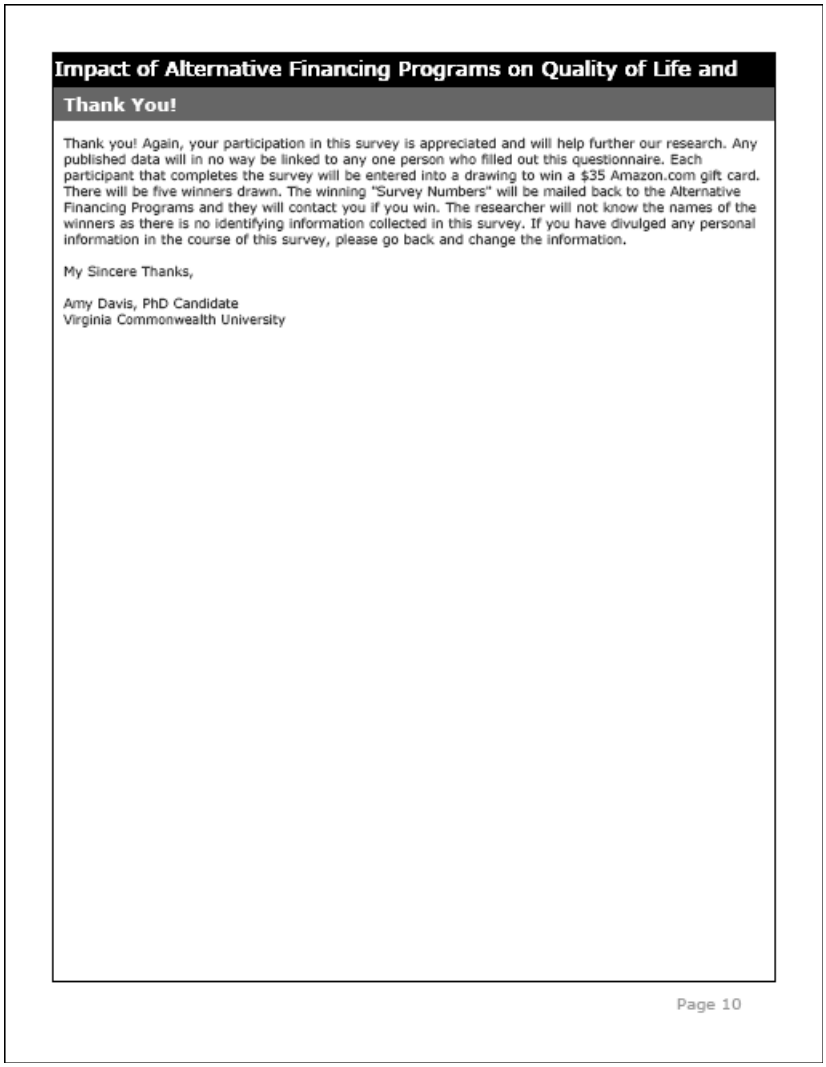
APPENDIX C: Continued

Online Version of Survey Tool



Impact of Alternative Financing Programs on Quality of Life and

Thank You!

Thank you! Again, your participation in this survey is appreciated and will help further our research. Any published data will in no way be linked to any one person who filled out this questionnaire. Each participant that completes the survey will be entered into a drawing to win a $35 Amazon.com gift card. There will be five winners drawn. The winning "Survey Numbers" will be mailed back to the Alternative Financing Programs and they will contact you if you win. The researcher will not know the names of the winners as there is no identifying information collected in this survey. If you have divulged any personal information in the course of this survey, please go back and change the information.

My Sincere Thanks,

Amy Davis, PhD Candidate
Virginia Commonwealth University

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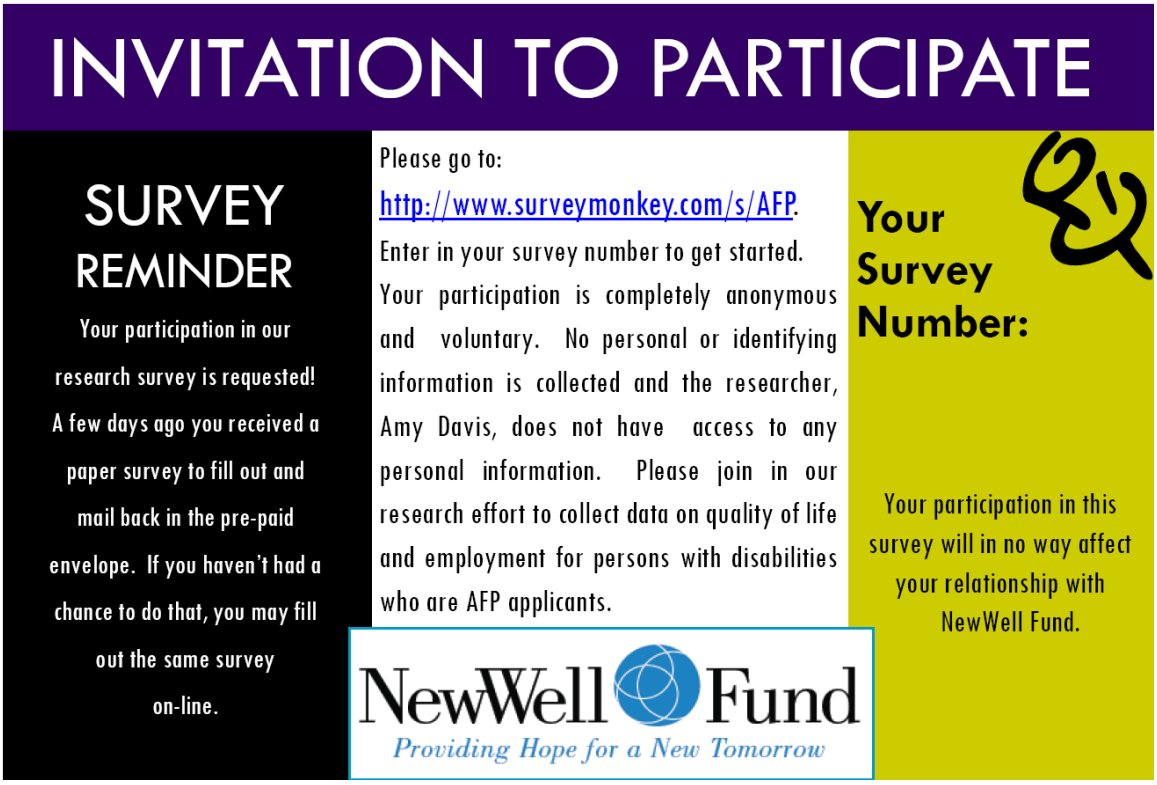
APPENDIX D

Reminder Post Card



NewWell Fund
Providing Hope for a New Tomorrow

NewWell Fund
1602 Rolling Hills Drive
Suite 107
Richmond, VA 23229

PLEASE PLACE STAMP HERE

APPENDIX E

IRB Approval Letter

VCU Memo
Virginia Commonwealth University

Office of Research
Office of Research Subjects Protection
BioTechnology Research Park
800 East Leigh Street, Suite 114
P.O. Box 980568
Richmond, Virginia 23298-0568

(804) 827-0868
Fax: (804) 827-1448

DATE: February 26, 2010

TO: Michael West, PhD
Rehabilitation Research and Training Center
Box 842011

FROM: Lea Ann Hansen, Pharm D
Chairperson, VCU IRB Panel D
Box 980568

RE: **VCU IRB #: HM12693**
Title: Impact of Alternative Financing Programs on Quality of Life and Employment Outcomes of Individuals with Disabilities

On February 26, 2010, the following research study was ***approved*** by expedited review according to 45 CFR 46.110 Category 7. This approval reflects the revisions received in the Office of Research Subjects Protection on January 19, 2010. This approval includes the following items reviewed by this Panel:

PROTOCOL: Impact of Alternative Financing Programs on Quality of Life and Employment Outcomes of Individuals with Disabilities
- Research Plan (dated 2/26/10; received in ORSP 2/26/10)

CONSENT ASSENT:
- Research Subject Information and Consent Form (dated 1/14/10; 3pages; received in ORSP 1/19/10)
  - All four conditions for waiver of consent have been met. See §45 CFR 46.116(d). The IRB has waived elements of consent CFR46.116(a)(1) and (6).
  - One of the conditions set forth in 45 CFR 46 117(c) (1), (2) for waiver of documentation of consent has been met and the IRB Panel has waived documentation of consent.

ADDITIONAL DOCUMENTS:
- Scholarly Research Survey (paper version; Version 2; dated 1/14/10; received in ORSP 1/19/10)
- Scholarly Research Survey (online version; Version 2; dated 1/14/10; received in ORSP 1/19/10)
- Easter Seals cover letter (dated 12/14/09; received in ORSP 1/7/10)
- Center for Financial Independence & Innovation cover letter (dated 1/14/10; received in ORSP 1/19/10)
- Kansas Assistive Technology Cooperative cover letter (dated 1/14/10; received in ORSP 1/19/10)
- New Well Fund cover letter (dated 1/14/10; received in ORSP 1/19/10)
- Easter Seals Reminder postcard (dated 1/14/10; received in ORSP 1/19/10) –to be mailed in an envelope
- Center for Financial Independence & Innovation postcard (dated 1/14/10; received in ORSP 1/19/10) – to be mailed in an envelope
- Kansas Assistive Technology Cooperative postcard (dated 1/14/10; received in ORSP 1/19/10) – to be mailed in an envelope

APPENDIX E: Continued

IRB Approval Letter

- New Well Fund postcard (dated 1/14/10; received in ORSP 1/19/10) – to be mailed in an envelope

This approval expires on January 31, 2011. Federal Regulations/VCU Policy and Procedures require continuing review prior to continuation of approval past that date. Continuing Review report forms will be mailed to you prior to the scheduled review.

The Primary Reviewer assigned to your research study is Heather Traino, PhD. If you have any questions, please contact Dr. Traino at hmtraino@vcu.edu or 628-7530; or you may contact Stuart Perkins, IRB Coordinator, VCU Office of Research Subjects Protection, at smperkin@vcu.edu or 827-1445.

Attachment – Conditions of Approval

APPENDIX E: Continued

IRB Approval Letter

Conditions of Approval:

In order to comply with federal regulations, industry standards, and the terms of this approval, the investigator must *(as applicable)*:

1. Conduct the research as described in and required by the Protocol.
2. Obtain informed consent from all subjects without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate (unless Waiver of Consent is specifically approved or research is exempt).
3. Document informed consent using only the most recently dated consent form bearing the VCU IRB "APPROVED" stamp (unless Waiver of Consent is specifically approved).
4. Provide non-English speaking patients with a translation of the approved Consent Form in the research participant's first language. The Panel must approve the translated version.
5. Obtain prior approval from VCU IRB before implementing any changes whatsoever in the approved protocol or consent form, unless such changes are necessary to protect the safety of human research participants (e.g., permanent/temporary change of PI, addition of performance/collaborative sites, request to include newly incarcerated participants or participants that are wards of the state, addition/deletion of participant groups, etc.). Any departure from these approved documents must be reported to the VCU IRB immediately as an Unanticipated Problem (see #7).
6. Monitor all problems (anticipated and unanticipated) associated with risk to research participants or others.
7. Report Unanticipated Problems (UPs), including protocol deviations, following the VCU IRB requirements and timelines detailed in VCU IRB WPP VIII-7):
8. Obtain prior approval from the VCU IRB before use of any advertisement or other material for recruitment of research participants.
9. Promptly report and/or respond to all inquiries by the VCU IRB concerning the conduct of the approved research when so requested.
10. All protocols that administer acute medical treatment to human research participants must have an emergency preparedness plan. Please refer to VCU guidance on http:/www.research.vcu.edu/irb/guidance.htm.
11. The VCU IRBs operate under the regulatory authorities as described within:
    a) U.S. Department of Health and Human Services Title 45 CFR 46, Subparts A, B, C, and D (for all research, regardless of source of funding) and related guidance documents.
    b) U.S. Food and Drug Administration Chapter I of Title 21 CFR 50 and 56 (for FDA regulated research only) and related guidance documents.
    c) Commonwealth of Virginia Code of Virginia 32.1 Chapter 5.1 Human Research (for all research).

010507

APPENDIX F

Introduction Letter from (Respective) AFP to Survey Recipient

NewWell Fund
Providing Hope for a New Tomorrow

NewWell Fund
1602 Rolling Hills Drive, Suite 107
Richmond, Virginia 23229
804.662.9000 voice/TTY
1.866. 835.5976 voice toll free
804.662.9533 fax
atlfa@atlfa.org

Dear NewWell Fund Client:

NewWell Fund would like to invite you to participate in a research study conducted by PhD candidate Amy Davis from Virginia Commonwealth University. NewWell Fund along with the alternative financing loan programs in Nebraska, Kansas, and Georgia, have partnered with Ms. Davis. Her research is centered on applicants from the loan programs and how assistive technology has affected their lives. She is specifically interested in how assistive technology has affected quality of life and employment for persons with disabilities.

In partnering with Ms. Davis, NewWell Fund has agreed to mail out the enclosed survey. We hope that you will complete and return it in the enclosed, pre-paid envelope. Ms. Davis does not have access to any of our records or our client list. She provided the surveys to NewWell Fund and then we mailed it to you. The survey does not ask for personal or identifying information so your response will remain anonymous. Furthermore, no identifying information will be included in the published results. Also, none of the information on the completed survey will be seen by NewWell Fund. Again, participation is anonymous and voluntary.

If you do choose to participate, you will be eligible to win a $35 Amazon.com gift card. There will be a number on the survey, which will be your entry number. When you complete and mail in the survey, this number will be entered into the drawing and five random winners will be selected. The numbers of the winners will be sent back to NewWell Fund and we will know how to contact you if you win. Again, Ms. Davis will have no access to your personal information.

We hope you will join in this research effort.

Sincerely,

Joseph Wallace

Joey Wallace, PhD
Executive Director

Enclosures

APPENDIX G

Informed Consent Letter

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

TITLE: Impact of Alternative Financing Programs on Quality of Life and Employment Outcomes of Individuals with Disabilities

VCU IRB NO.: HM12693

PURPOSE OF THE STUDY

The purpose of this research study is to enhance our knowledge of the Alternative Financing Programs (AFP) and the populations of persons with disabilities that seek financial assistance through them. AFP clients apply for loans to purchase assistive technology and loans to telework. It is the goal of this study to investigate the nature of how assistive technology and telework opportunities have enhanced the quality of life and employment opportunities for this population. Additionally, we want to delineate what drives persons with disabilities to seek assistive technology and then, how that plays a role in participation in teleworking, provided telework is available. You are being asked to participate in this study because you are an AFP client.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT

If you decide to be in this research study, you will be asked to answer 14 questions, which will take you approximately 10 minutes. You may choose to answer these questions on the paper survey provided or online. If you choose to mark your answers on the paper survey, please mail it back in the pre-paid envelope enclosed. If you choose to answer the same questions online, please enter the survey number in the top right-hand corner of your survey as your password and throw away the paper survey. There is no need to do both.

Your participation in this research is **completely voluntary and anonymous**. You may choose to skip questions with which you are uncomfortable, or to discontinue your participation if you wish. No identifying information will be collected that can link a respondent to specific responses, and IP addresses of online respondents are not being recorded. Sending in the paper survey or entering your survey number as the password to the online version of the survey will indicate your consent to participate in this research.

RISKS AND DISCOMFORTS

This research presents minimal risk to you. However, there is still a very small, but real risk that you could experience some distress while answering the survey questions. The survey contains questions inquiring about your employment status, quality of life, independence level in the home and community, and types of support needed. These questions could potentially be distressing if you have had difficulty finding employment, your independence level is limited, if you need continual support, or if you report a very poor quality of life. Answering the survey questions could present minimal psychological harm. There is no risk of legal or social harm as the survey is completely anonymous. There is no risk of physical harm because you can take the survey in any environment you choose and can skip questions or quit at any time.

APPENDIX G: Continued

Informed Consent Letter

BENEFITS TO YOU AND OTHERS
You may not get any direct benefit from this study, but, the information we learn from the participants during the course of this research may help us define employment patterns following the purchase of assistive technology as well as how self-reported quality of life is affected by employment and independence. Since this research is being conducted by a PhD Candidate, no money will be received by the student or Virginia Commonwealth University.

COSTS
There are no costs for participating in this study other than the time you will spend answering the survey questions.

PAYMENT FOR PARTICIPATION
Each participant will be entered in a drawing to win a $35 Amazon.com gift card. Five winners will be drawn and their survey numbers (found on the paper survey in the top right-hand corner as well as on the post card reminder) will be sent back to the AFP. Your AFP will contact you if you win. The researcher will not know the names or addresses of the winners.

ALTERNATIVES
Your alternative is NOT to participate.

CONFIDENTIALITY
Potentially identifiable information about you will consist of your name and address held only with the AFP with which you applied for a loan.

Surveys will be mailed to the four AFPs and they will send each randomly selected client a survey. The researcher will never see who the recipients are and does not have access to the AFP databases or client lists. The survey tool does not ask for any personal or identifying information. The paper surveys will be kept in a locked file drawer until the research is complete and will then be destroyed. The on-line survey will not collect IP addresses and is the same anonymous survey tool as the paper survey being mailed out. All data will be password protected and destroyed when the research is complete.

Each Alternative Financing Program (AFP) has access to its own client base. However, they will not have access to the research once clients have completed the survey

Data is being collected only for research purposes. This information will not be directly shared with anyone; however, aggregate data gathered during the course of the research will be published in the form of a dissertation. Published data will in no way be linked to any participant who fills out the questionnaire.

VOLUNTARY PARTICIPATION AND WITHDRAWAL
You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. You may also choose not to answer particular questions that are asked in the study. Your participation in this study will in NO way affect your relationship with your AFP.

APPENDIX G: Continued

Informed Consent Letter

QUESTIONS

In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Michael D. West, PhD, PI
Rehabilitation Research & Training Center
1314 West Main Street
PO Box 842011
Richmond, VA 23284
mdwest@vcu.ed

OR

Amy Davis, PhD Candidate
Rehabilitation Research & Training Center
1314 West Main Street
PO Box 842011
Richmond, VA 23284
andye@vcu.edu

If you have any questions about your rights as a participant in this study, you may contact:

Office for Research
Virginia Commonwealth University
800 East Leigh Street, Suite 113
P.O. Box 980568
Richmond, VA 23298
Telephone: 804-827-2157

You may also contact this number for general questions, concerns or complaints about the research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm.

CONSENT

I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. I am willing to participate in this study. This is your copy of the consent form.

Please do not sign this form; this is only for your information. Please do not send this form back to the researcher. The researcher cannot know any identifying information about the participants.

APPENDIX H

Survey Questions with Referenced Data Type Indicated

Survey Question 1 (Data Type: Nominal)

What type of low-interest loan did you apply for?	Were you approved for the loan?			
	Yes	No	Pending	N/A
Loan for Assistive Technology				
Telework Loan				
Self-Employment Loan				
Self-Employment Loan to Telework				
Other				

Survey Question 2 (Data Type: Nominal)

If your loan was for Assistive Technology, what did you want to purchase?								Does Not Apply. My loan was NOT for Assistive Technology. Check Here ☐
List Assistive Technology ⇩ Below ⇩	Would this AT Enhance your Quality of Life?		Would this AT Give You Independence at Home?		Would this AT Give You Independence in your community?		Would this AT Increase your Ability to Work?	
	Yes	No	Yes	No	Yes	No	Yes	No

Survey Question 3 (Data Type: Nominal and Ordinal)

Do You Require:	From Whom?	Check All That Apply				Did this motivate you to apply for a low-interest loan?		
		Never	Sometimes	Frequently	Continuously	Yes	No	N/A
Physical Support? (Dressing, bathing, transportation, etc.)	Family Members							
	Friends							
	Others							
Emotional Support? (Encouragement, coping, etc.)	Family Members							
	Friends							
	Others							
Financial Support? (Help with living expenses, etc.)	Family Members							
	Friends							
	Others							

APPENDIX H: Continued

Survey Questions with Referenced Data Type Indicated

Survey Question 4 (Data Type: Nominal)

Has your disability hindered you from finding employment?	
	Yes
	No
	Pending Status
	I have not attempted to obtain employment
	Does Not Apply
	Other

Survey Question 5 (Data Type: Nominal)

Please Share your Employment Status: *(Check All That Apply)*	Before Applying for a Low-Interest Loan			After Applying for a Low-Interest Loan		
	Yes	No	N/A	Yes	No	N/A
Employed						
Employed, but looking for a job						
Waiting to hear back about a job						
Not employed, but looking for a job						
Not employed, NOT looking for a job						

Survey Question 6 (Data Type: Nominal)

Please Share your Telework Experience: *(Check All That Apply)*	Before Applying for a Low-Interest Loan			After Applying for a Low-Interest Loan		
	Yes	No	N/A	Yes	No	N/A
Unaware that telework existed						
Interested in telework						
Need assistive technology to telework						
Too difficult to obtain a telework position						
Other						

APPENDIX H: Continued

Survey Questions with Referenced Data Type Indicated

Survey Question 7 (Data Type: Nominal)

What goals motivated you when applying for a low-interest loan?	
Check All That Apply	
	Self-Care (i.e., personal hygiene, cooking, errands, doctors' appointments, therapy, etc.)
	Care for others (i.e., parents, children, roommate)
	Independence
	Enhance quality of life
	Participate in recreational activities (i.e., wheelchair basketball, hiking, fishing, etc.)
	Enhance my social life
	Increased chances of finding a job
	I want to telework
	I want to start my own business
	Other

Survey Question 8 (Data Type: Ordinal)

If you had to rate your Quality of Life, where would you consider yourself on this scale?					
Please Circle Your Answer	Very Poor	Poor	Indifferent	Good	Excellent
	1	2	3	4	5

Survey Question 9 (Data Type: Ordinal)

Rate your independence level at home:					
Please Circle Your Answer	Not Independent	Somewhat Independent	Neutral	Very Independent	Extremely Independent
	1	2	3	4	5

Survey Question 10 (Data Type: Ordinal)

Rate your independence level in your community:					
Please Circle Your Answer	Not Independent	Somewhat Independent	Neutral	Very Independent	Extremely Independent
	1	2	3	4	5

Survey Question 11 (Data Type: Ordinal)

Rate your ability to work:					
Please Circle Your Answer	Not Able	Somewhat Able	Neutral	Very Able	Extremely Able
	1	2	3	4	5

APPENDIX H: Continued

Survey Questions with Referenced Data Type Indicated

Survey Question 12 (Data Type: Ordinal)

Rate your desire to be employed:					
Please Circle Your Answer	No Desire	Somewhat Desire	Neutral	Very Desirable	Extreme Desire
	1	2	3	4	5

Survey Question 13 (Data Type: Ordinal)

Rate your desire to telework:					
Please Circle Your Answer	Do Not Desire	Somewhat Desire	Neutral	Very Desirable	Extreme Desire
	1	2	3	4	5

Survey Question 14 (Data Type: Nominal and Interval)

Please Circle Your Answers						
Gender:	Female	Male	Your **Age** Today_____			
Education:	Less than High School	High School	Associate's	Bachelor's	Master's or Higher	Other_____

APPENDIX I

Cross-Tabulations of Every Variable in the Study

Table I1
Type of AT Listed for Purchase with Loan

Listed AT Use	*f*	%
No	12	7.7%
Yes	131	84.5%
Missing	12	7.7%
Total	155	100%

Note. Whether respondent listed what type of AT they wanted to purchase.

Table I2
If AT Purchased with Loan Would Enhance QoL

Enhance QoL	*f*	%
No	2	1.3%
Yes	124	80.0%
Missing	29	18.7%
Total	155	100%

Note. Respondent was asked if purchase/use of listed AT would enhance their QoL.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I3
If AT Purchased Would Give Independence at Home

Independence at Home	*f*	%
No	52	33.6%
Yes	64	41.3%
Missing	39	25.2%
Total	155	100%

Note. Respondent was asked if purchase/use of listed AT would give them independence at home.

Table I4
If AT Purchased Would Give Independence in the Community

Independence in Community	*f*	%
No	12	7.7%
Yes	113	72.9%
Missing	30	19.4%
Total	155	100%

Note. Respondent was asked if purchase/use of listed AT would give them independence in their community.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I5
If AT Purchased Would Increase Ability to Work

Increase Ability to Work	*f*	%
No	45	29.0%
Yes	74	47.7%
Missing	36	23.2%
Total	155	100%

Note. Respondent was asked if purchase/use of listed AT would increase their ability to work.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I6
Requires Physical Support from Family & Motivations for AFP Loan

	f	%
Requires Physical Support From Family		
Never	27	17.4%
Sometimes	23	14.8%
Frequently	21	13.6%
Continuously	56	36.1%
Missing	28	18.1%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	76	49.0%
No	27	17.4%
Not Applicable	16	10.3%
Missing	36	23.2%
Total	155	100%

Note. Respondent was asked if they required physical support from family members. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I7
Requires Physical Support from Friends & Motivations for AFP Loan

	f	%
Requires Physical Support From Friends		
Never	29	18.7%
Sometimes	29	18.7%
Frequently	8	5.2%
Continuously	12	7.7%
Missing	77	49.7%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	21	13.6%
No	17	11.0%
Not Applicable	18	11.6%
Missing	99	63.9%
Total	155	100%

Note. Respondent was asked if they required physical support from friends. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I8
Requires Physical Support from Others & Motivations for AFP Loan

	f	%
Requires Physical Support From Others		
Never	27	17.4%
Sometimes	17	11.0%
Frequently	9	5.8%
Continuously	36	23.2%
Missing	66	42.6%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	28	18.1%
No	15	9.7%
Not Applicable	19	12.3%
Missing	93	60.0%
Total	155	100%

Note. Respondent was asked if they required physical support from others. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I9
Requires Emotional Support from Family & Motivations for AFP Loan

	f	%
Requires Emotional Support From Family		
Never	19	12.3%
Sometimes	47	30.3%
Frequently	19	12.3%
Continuously	41	26.5%
Missing	29	18.7%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	41	26.5%
No	30	19.4%
Not Applicable	18	11.6%
Missing	66	42.6%
Total	155	100%

Note. Respondent was asked if they required emotional support from family. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I10
Requires Emotional Support from Friends & Motivations for AFP Loan

	f	%
Requires Emotional Support From Friends		
Never	18	11.6%
Sometimes	37	23.9%
Frequently	20	12.9%
Continuously	15	9.7%
Missing	65	41.9%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	20	12.9%
No	16	10.3%
Not Applicable	18	11.6%
Missing	101	65.2%
Total	155	100%

Note. Respondent was asked if they required emotional support from friends. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I11
Requires Emotional Support from Others & Motivations for AFP Loan

	f	%
Requires Emotional Support From Others		
Never	18	11.6%
Sometimes	29	18.7%
Frequently	11	7.1%
Continuously	20	12.9%
Missing	77	49.7%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	19	12.3%
No	15	9.7%
Not Applicable	16	10.3%
Missing	105	67.7%
Total	155	100%

Note. Respondent was asked if they required emotional support from others. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I12
Requires Financial Support from Family & Motivations for AFP Loan

	f	%
Requires Financial Support From Family		
Never	36	23.2%
Sometimes	25	16.1%
Frequently	10	6.5%
Continuously	37	23.9%
Missing	47	30.3%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	48	31.0%
No	22	14.2%
Not Applicable	16	10.3%
Missing	69	44.5%
Total	155	100%

Note. Respondent was asked if they required financial support from family. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I13
Requires Financial Support from Friends & Motivations for AFP Loan

	f	%
Requires Financial Support From Friends		
Never	47	30.3%
Sometimes	10	6.5%
Frequently	2	1.3%
Continuously	8	5.2%
Missing	88	56.8%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	17	11.0%
No	14	9.0%
Not Applicable	17	11.0%
Missing	107	69.0%
Total	155	100%

Note. Respondent was asked if they required financial support from friends. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I14
Requires Financial Support from Others & Motivations for AFP Loan

	f	%
Requires Financial Support From Others		
Never	40	25.8%
Sometimes	14	9.0%
Frequently	5	3.2%
Continuously	18	11.6%
Missing	78	50.3%
Total	155	100%
Motivations to Apply for AFP Loan		
Yes	31	20.0%
No	13	8.4%
Not Applicable	16	10.3%
Missing	95	61.3%
Total	155	100%

Note. Respondent was asked if they required financial support from others. Ordinal data recorded on a 4 point Likert scale where 1=never and 4=continuously. Respondents were asked if required support motivated them to apply for an AFP loan.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I15
Employment Hindered by Disability

Employment Hindered	*f*	%
Yes	74	47.7%
No	32	20.7%
Pending Status	1	0.7%
I have not Attempted to Obtain Employment	13	8.4%
Does Not Apply	26	16.8%
Other	9	5.8%
Total	155	100%

Note. Respondent was asked if their disability hindered them from finding employment.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I16
Reported Employment Status

Employment Status	Yes	No	N/A	Missing
Before AFP Loan				
Employed	36	32	15	72
Employed, but looking for a job	8	21	18	108
Waiting to hear back about a job	7	21	18	109
Not Employed, but looking for a job	20	18	17	100
Not Employed, & Not looking for a job	52	19	21	63
After AFP Loan				
Employed	36	21	17	81
Employed, but looking for a job	1	18	18	118
Waiting to hear back about a job	2	18	19	116
Not Employed, but looking for a job	21	17	14	103
Not Employed, & Not looking for a job	40	14	25	76

Note. Percentages not reliable because many respondents marked all three answers for each category.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I17
Ultimately Employed AFP Clients

Ultimately Employed	*f*	%
Yes	37	23.9%
No	21	13.6%
Missing	97	62.6%
Total	155	100%

Note. Table depicts all respondents who marked "yes" for "Employed" and/or "Employed, but looking for a job" on the employment status question. Variable collapsed into binomial data.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I18
Reported Telework Experience

Telework Experience	Yes	No	N/A	Missing
Before AFP Loan				
Unaware that telework existed	56	14	44	41
Interested in Telework	24	14	38	79
Need AT to Telework	17	17	37	84
Too difficult to obtain telework position	12	10	47	86
Other	11	4	33	107
After AFP Loan				
Unaware that telework existed	35	16	43	61
Interested in Telework	22	12	35	86
Need AT to Telework	13	14	36	92
Too difficult to obtain telework position	10	6	45	94
Other	10	4	34	107

Note. Percentages not reliable because many respondents marked all three answers for each category.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I19
Interested in Telework

Interested in Telework	*f*	%
Yes	27	17.4%
No	128	82.6%
Missing	0	0%
Total	155	100%

Note. Table depicts all respondents who marked "Very Desirable" and/or "Extreme Desire" on the telework experience question. Variable collapsed into binomial data.

Table I20
Goals that Motivated AFP Applicants to Apply for a Low-Interest Loan

Goals	Yes	%	No	%
Self Care	93	60.0%	62	40.0%
Care for Others	29	18.7%	126	81.3%
Independence	120	77.4%	35	22.6%
Enhance Quality of Life	136	87.7%	19	12.3%
Participate in Recreational Activities	62	40.0%	93	60.0%
Enhance Social Life	84	54.2%	71	45.8%
Increased chances of finding a job	33	21.3%	122	78.7%
I want to Telework	13	8.4%	142	91.6%
I want to start my own business	14	9.0%	141	91.0%
Other	22	14.2%	133	85.8%

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I21
Self-Reported Quality of Life for all AFP Clients

Quality of Life	*f*	%
Very Poor	5	3.2%
Poor	19	12.3%
Indifferent	36	23.2%
Good	66	42.6%
Excellent	26	16.8%
Missing	3	1.9%
Total	155	100%

Note. QoL reported on a 5-point Likert scale where 1=Very Poor and 5=Excellent.

Table I22
Self-Reported Independence Level at Home

Independence	*f*	%
Not Independent	24	15.5%
Somewhat Independent	43	27.7%
Neutral	23	14.8%
Very Independent	41	26.5%
Extremely Independent	23	14.8%
Missing	1	0.7%
Total	155	100%

Note. Independence level reported on a 5-point Likert scale where 1=Not Independent and 5=Extremely Independent.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I23
Self-Reported Independence Level in the Community

Independence	*f*	%
Not Independent	27	17.4%
Somewhat Independent	46	29.7%
Neutral	32	20.7%
Very Independent	35	22.6%
Extremely Independent	14	9.0%
Missing	1	0.7%
Total	155	100%

Note. Independence level reported on a 5-point Likert scale where 1=Not Independent and 5=Extremely Independent.

Table I24
Self-Reported Ability to Work

Ability to Work	*f*	%
Not Able	63	40.7%
Somewhat Able	32	20.7%
Neutral	16	10.3%
Very Able	23	14.8%
Extremely Able	19	12.3%
Missing	2	1.3%
Total	155	100%

Note. Ability to work reported on a 5-point Likert scale where 1=Not Able and 5=Extremely Able.

APPENDIX I: Continued

Cross-Tabulations of Every Variable in the Study

Table I25
Self-Reported Desire to be Employed

Desire to be Employed	*f*	%
No Desire	35	22.6%
Somewhat Desire	18	11.6%
Neutral	26	16.8%
Very Desirable	32	20.7%
Extreme Desire	37	23.9%
Missing	7	4.5%
Total	155	100%

Note. Desire to be employed reported on a 5-point Likert scale where 1=No Desire and 5=Extreme Desire.

Table I26
Self-Reported Desire to Telework

Desire to Telework	*f*	%
Do Not Desire	66	42.6%
Somewhat Desire	12	7.7%
Neutral	38	24.5%
Very Desirable	19	12.3%
Extreme Desire	8	5.2%
Missing	12	7.7%
Total	155	100%

Note. Desire to Telework reported on a 5-point Likert scale where 1=Do Not Desire and 5=Extreme Desire.

APPENDIX J

Cross-Tabulations with Gender and Main Research Variables

Table J1
Gender

Gender	*f*	%
Female	67	43.2%
Male	86	55.5%
Missing	2	1.3%
Total	155	100%

Table J2
Self-Reported Quality of Life by Gender

QoL	Female	Male	Missing	Total
Very Poor	0	5	0	5
Poor	4	15	0	19
Indifferent	19	17	0	36
Good	32	32	2	66
Excellent	11	15	0	26
Missing	1	2	0	3
Total	67	86	2	155

APPENDIX J: Continued

Cross-Tabulations with Gender and Main Research Variables

Table J3
Self-Reported Independence at Home by Gender

Independence	Female	Male	Missing	Total
Not Independent	11	13	0	24
Somewhat Independent	16	26	1	43
Neutral	10	13	0	23
Very Independent	17	23	1	41
Extremely Independent	13	10	0	23
Missing	0	1	0	1
Total	67	86	2	155

Table J4
Self-Reported Independence in the Community by Gender

Independence	Female	Male	Missing	Total
Not Independent	11	15	1	27
Somewhat Independent	21	25	0	46
Neutral	13	19	0	32
Very Independent	16	18	1	35
Extremely Independent	6	8	0	14
Missing	0	1	0	1
Total	67	86	2	155

APPENDIX J: Continued

Cross-Tabulations with Gender and Main Research Variables

Table J5
Goals that Motivated AFP Applicants to Apply for a Low-Interest Loan by Gender

Goals	Female	Male	Missing	Total
Self Care	43	49	1	93
Care for Others	13	16	0	29
Independence	55	63	2	120
Enhance Quality of Life	62	72	2	136
Participate in Recreational Activities	21	40	1	62
Enhance Social Life	38	45	1	84
Increased chances of finding a job	18	15	0	33
I want to Telework	7	6	0	13
I want to start my own business	3	11	0	14
Other	12	10	0	22

Note. Totals for this variable are not based on N=155 because respondents could mark all answers that applied.

Table J6
Ultimately Employed by Gender

Gender	Employed	Not Employed	Missing	Total
Female	16	10	41	67
Male	21	11	54	86
Missing	0	0	2	2
Total	37	21	97	155

APPENDIX J: Continued

Cross-Tabulations with Gender and Main Research Variables

Table J7
Interested in Telework by Gender

Gender	Interested	Not Interested	Total
Female	13	54	67
Male	13	73	86
Missing	1	1	2
Total	27	128	155

APPENDIX K

Cross-Tabulations with Age and Main Research Variables

Table K1
Age

Age	*f*	%
Less than 25	16	10.3%
25 up to 35	14	9.0%
35 up to 45	20	12.9%
45 up to 55	34	21.9%
55 up to 65	39	25.2%
65 and Older	32	20.7%
Total	155	100%

Note. Age collapsed from interval data to nominal data for analysis.

Table K2
Self-Reported Quality of Life by Age

QoL	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Very Poor	1	0	0	1	2	1
Poor	0	0	1	5	8	5
Indifferent	3	4	3	8	11	7
Good	8	6	11	12	15	14
Excellent	3	4	5	7	2	5
Missing	1	0	0	1	1	0
Total	16	14	20	34	39	32

APPENDIX K: Continued

Cross-Tabulations with Age and Main Research Variables

Table K3
Self-Reported Independence at Home by Age

Independence	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Not Independent	7	4	3	2	2	6
Somewhat Independent	5	3	5	6	16	8
Neutral	2	4	1	6	6	4
Very Independent	1	1	4	13	12	10
Extremely Independent	1	2	7	7	3	3
Missing	0	0	0	0	0	1
Total	16	14	20	34	39	32

Table K4
Self-Reported Independence in the Community by Age

Independence	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Not Independent	6	4	2	2	6	7
Somewhat Independent	9	2	4	7	13	11
Neutral	1	5	3	10	8	5
Very Independent	0	2	8	11	9	5
Extremely Independent	0	1	3	4	3	3
Missing	0	0	0	0	0	1
Total	16	14	20	34	39	32

APPENDIX K: Continued

Cross-Tabulations with Age and Main Research Variables

Table K5
Goals that Motivated AFP Applicants to Apply for a Low-Interest Loan by Age

Goals	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Self Care	12	9	10	19	26	17
Care for Others	6	7	4	4	6	2
Independence	12	9	17	24	37	21
Enhance Quality of Life	15	12	18	29	34	28
Participate in Recreational Activities	8	7	8	13	17	9
Enhance Social Life	11	8	14	22	18	11
Increased chances of finding a job	2	6	6	8	8	3
I want to Telework	2	3	1	3	4	0
I want to start my own business	0	2	1	5	6	0
Other	2	1	6	4	6	3

Note. Totals for this variable are not based on N=155 because respondents could mark all answers that applied.

APPENDIX K: Continued

Cross-Tabulations with Age and Main Research Variables

Table K6
Ultimately Employed by Age

Employed	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Employed	0	3	10	9	11	4
Not Employed	1	2	2	6	5	5
Missing	15	9	8	19	23	23
Total	16	14	20	34	39	32

Table K7
Interested in Telework by Age

Telework	<25	25 to 35	35 to 45	45 to 55	55 to 65	65>
Interested	2	3	7	5	8	2
Not Interested	14	11	13	29	31	30
Total	16	14	20	34	39	32

APPENDIX L

Cross-Tabulations with Education and Main Research Variables

Table L1
Education

Education	*f*	%
Less than High School	18	11.6%
High School	70	45.2%
Associate's	28	18.1%
Bachelor's	18	11.6%
Master's or Higher	14	9.0%
Other	5	3.2%
Missing	2	1.3%
Total	155	100%

Table L2
Self-Reported Quality of Life by Education

QoL	<High School	High School	Associate's	Bachelor's	Master's>	Other
Very Poor	2	1	1	0	1	0
Poor	1	14	2	1	1	0
Indifferent	4	16	11	2	3	0
Good	9	28	11	10	2	5
Excellent	1	10	3	5	6	0
Missing	1	1	0	0	1	0
Total	18	70	28	18	14	5

APPENDIX L: Continued

Cross-Tabulations with Education and Main Research Variables

Table L3
Self-Reported Independence at Home by Education

Independence	<High School	High School	Associate's	Bachelor's	Master's>	Other
Not Independent	9	9	1	1	2	2
Somewhat Independent	7	20	10	2	2	2
Neutral	1	15	2	4	1	0
Very Independent	1	16	14	4	4	1
Extremely Independent	0	9	1	7	5	0
Missing	0	1	0	0	0	0
Total	18	70	28	18	14	5

APPENDIX L: Continued

Cross-Tabulations with Education and Main Research Variables

Table L4
Self-Reported Independence in the Community by Education

Independence	<High School	High School	Associate's	Bachelor's	Master's>	Other
Not Independent	8	11	1	1	3	3
Somewhat Independent	7	21	14	1	2	1
Neutral	3	18	5	4	2	0
Very Independent	0	13	6	10	3	1
Extremely Independent	0	7	1	2	4	0
Missing	0	0	1	0	0	0
Total	18	70	28	18	14	5

APPENDIX L: Continued

Cross-Tabulations with Education and Main Research Variables

Table L5
Goals that Motivated AFP Applicants to Apply for a Low-Interest Loan by Education

Goals	<High School	High School	Associate's	Bachelor's	Master's>	Other
Self Care	15	37	21	8	7	4
Care for Others	5	14	5	1	3	1
Independence	14	50	27	13	11	3
Enhance QoL	18	58	26	16	13	3
Recreational Activities [a]	11	26	12	10	3	0
Enhance Social Life	13	38	14	10	7	1
Increased chances of finding a job	2	16	8	3	2	1
I want to Telework	2	4	5	2	0	0
I want to start my own business	1	5	1	3	4	0
Other	1	11	2	4	2	1

Note. Totals for this variable are not based on N=155 because respondents could mark all answers that applied.
[a] Recreational Activities stands for "Participate in Recreational Activities."

APPENDIX L: Continued

Cross-Tabulations with Education and Main Research Variables

Table L6
Ultimately Employed by Education

Employed	<High School	High School	Associate's	Bachelor's	Master's>	Other
Employed	0	8	8	13	7	0
Not Employed	2	13	5	1	0	0
Missing	16	49	15	4	7	5
Total	18	70	28	18	14	5

Table L7
Interested in Telework by Education

Telework	<High School	High School	Associate's	Bachelor's	Master's>	Other
Interested	2	9	7	6	3	0
Not Interested	16	61	21	12	11	5
Total	18	70	28	18	14	5

APPENDIX M

Cross-Tabulations of Goals that Motivated Loan Application by Client Loan Status

Table M1
Goal of 'Self Care' by Client Loan Status

	Goal of Self Care			
Client Loan Status	No	Yes	Missing	Total
Denied	1	5	0	6
Accepted	56	83	0	139
Pending	2	3	0	5
Missing	2	2	1	5
Total	61	93	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

Table M2
Goal of 'Care for Others' by Client Loan Status

	Goal of Care for Others			
Client Loan Status	No	Yes	Missing	Total
Denied	5	1	0	6
Accepted	112	27	0	139
Pending	5	0	0	5
Missing	3	1	1	5
Total	125	29	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

APPENDIX M: Continued

Cross-Tabulations of Goals that Motivated Loan Application by Client Loan Status

Table M3
Goal of 'Independence' by Client Loan Status

	Goal of Independence			
Client Loan Status	No	Yes	Missing	Total
Denied	0	6	0	6
Accepted	31	108	0	139
Pending	2	3	0	5
Missing	1	3	1	5
Total	34	120	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

Table M4
Goal of 'Enhance Quality of Life' by Client Loan Status

	Goal of Enhance QoL			
Client Loan Status	No	Yes	Missing	Total
Denied	1	5	0	6
Accepted	13	126	0	139
Pending	1	4	0	5
Missing	3	1	1	5
Total	18	136	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

APPENDIX M: Continued

Cross-Tabulations of Goals that Motivated Loan Application by Client Loan Status

Table M5
Goal of 'Participate in Recreational Activities' by Client Loan Status

	Goal of Recreational Activities			
Client Loan Status	No	Yes	Missing	Total
Denied	5	1	0	6
Accepted	82	57	0	139
Pending	2	3	0	5
Missing	3	1	1	5
Total	92	62	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

Table M6
Goal of 'Enhance Social Life' by Client Loan Status

	Goal of Enhance Social Life			
Client Loan Status	No	Yes	Missing	Total
Denied	2	4	0	6
Accepted	62	77	0	139
Pending	4	1	0	5
Missing	2	2	1	5
Total	70	84	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

APPENDIX M: Continued

Cross-Tabulations of Goals that Motivated Loan Application by Client Loan Status

Table M7
Goal of 'Increase Chances of Finding a Job' by Client Loan Status

	Goal of Increase Chances of Finding a Job			
Client Loan Status	No	Yes	Missing	Total
Denied	3	3	0	6
Accepted	110	29	0	139
Pending	4	1	0	5
Missing	4	0	1	5
Total	121	33	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

Table M8
Goal of 'Want to Telework' by Client Loan Status

	Goal of Want to Telework			
Client Loan Status	No	Yes	Missing	Total
Denied	5	1	0	6
Accepted	127	12	0	139
Pending	5	0	0	5
Missing	4	0	1	5
Total	141	13	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

APPENDIX M: Continued

Cross-Tabulations of Goals that Motivated Loan Application by Client Loan Status

Table M9
Goal of 'Want to Start Own Business' by Client Loan Status

	Goal of Want to Start Own Business			
Client Loan Status	No	Yes	Missing	Total
Denied	4	2	0	6
Accepted	127	12	0	139
Pending	5	0	0	5
Missing	4	0	1	5
Total	140	14	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

Table M10
Goal of 'Other' by Client Loan Status

	Goal of 'Other'			
Client Loan Status	No	Yes	Missing	Total
Denied	4	2	0	6
Accepted	119	20	0	139
Pending	5	0	0	5
Missing	4	0	1	5
Total	132	22	1	155

Note. Respondents were asked to" mark all that applied" when considering what goals motivated them to apply for a low-interest loan. Aggregate Data.

APPENDIX N

Cross-Tabulations of Required Supports and Motivations for Loan Application

Table N1
Required Physical Support from Family & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Physical Support from Family	No	Yes	Pending	Missing	Total
Never	6	6	5	10	27
Sometimes	6	13	3	1	23
Frequently	3	16	2	0	21
Continuously	8	39	4	5	56
Missing	4	2	2	20	28
Total	27	76	16	36	155

Note. Aggregate Data.

Table N2
Required Physical Support from Friends & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Physical Support from Friends	No	Yes	Pending	Missing	Total
Never	6	1	8	14	29
Sometimes	6	10	5	8	29
Frequently	0	2	2	4	8
Continuously	3	6	0	3	12
Missing	2	2	3	70	77
Total	17	21	18	99	155

Note. Aggregate Data.

APPENDIX N: Continued

Cross-Tabulations of Required Supports and Motivations for Loan Application

Table N3
Required Physical Support from Others & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Physical Support from Others	No	Yes	Pending	Missing	Total
Never	4	2	8	13	27
Sometimes	2	6	2	7	17
Frequently	0	3	3	3	9
Continuously	7	16	4	9	36
Missing	2	1	2	61	66
Total	15	28	19	93	155

Note. Aggregate Data.

Table N4
Required Emotional Support from Family & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Emotional Support from Family	No	Yes	Pending	Missing	Total
Never	5	1	4	9	19
Sometimes	15	15	6	11	47
Frequently	3	7	1	8	19
Continuously	5	17	3	16	41
Missing	2	1	4	22	29
Total	30	41	18	66	155

Note. Aggregate Data.

APPENDIX N: Continued

Cross-Tabulations of Required Supports and Motivations for Loan Application

Table N5
Required Emotional Support from Friends & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Emotional Support from Friends	No	Yes	Pending	Missing	Total
Never	5	0	5	8	18
Sometimes	6	11	5	15	37
Frequently	0	5	4	11	20
Continuously	2	3	1	9	15
Missing	3	1	3	58	65
Total	16	20	18	101	155

Note. Aggregate Data.

Table N6
Required Emotional Support from Others & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Emotional Support from Others	No	Yes	Pending	Missing	Total
Never	5	0	5	8	18
Sometimes	3	10	5	11	29
Frequently	0	4	1	6	11
Continuously	3	5	1	11	20
Missing	4	0	4	69	77
Total	15	19	16	105	155

Note. Aggregate Data.

APPENDIX N: Continued

Cross-Tabulations of Required Supports and Motivations for Loan Application

Table N7
Required Financial Support from Family & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Financial Support from Family	No	Yes	Pending	Missing	Total
Never	9	9	4	14	36
Sometimes	8	7	2	8	25
Frequently	0	8	0	2	10
Continuously	3	20	5	9	37
Missing	2	4	5	36	47
Total	22	48	16	69	155

Note. Aggregate Data.

Table N8
Required Financial Support from Friends & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Financial Support from Friends	No	Yes	Pending	Missing	Total
Never	9	7	11	20	47
Sometimes	1	3	1	5	10
Frequently	0	2	0	0	2
Continuously	0	5	0	3	8
Missing	4	0	5	79	88
Total	14	17	17	107	155

Note. Aggregate Data.

APPENDIX N: Continued

Cross-Tabulations of Required Supports and Motivations for Loan Application

Table N9
Required Financial Support from Others & Motivation to Apply for AFP Loan

	Motivated to Apply for AFP Loan				
Required Financial Support from Others	No	Yes	Pending	Missing	Total
Never	6	7	10	17	40
Sometimes	1	8	1	4	14
Frequently	1	3	0	1	5
Continuously	2	9	1	6	18
Missing	3	4	4	67	78
Total	13	31	16	95	155

Note. Aggregate Data.

VITA

Amy Nicole Dye Davis

Born: 10 August 1975 in Big Stone Gap, Virginia
Proud Veteran & Army Wife
One son...the center of our world...

EDUCATION

Virginia Commonwealth University, Richmond, Virginia
PhD Education (Urban Services Leadership)
Candidate for PhD, May 2010

University of Arizona, Tucson, Arizona
Master of Science Degree in Epidemiology & Statistics
Graduated, May 2004

Western Washington University, Bellingham, Washington
Bachelor of Science in Cellular Biology
Graduated, May 1999

EMPLOYMENT

Virginia Commonwealth University, Richmond, Virginia
Research Administrator, January 2005 - Present

Utilize statistical skills and research training to conduct analysis, gather data, network within the community, and publish work on several different grants, all of which aim to benefit persons with severe disabilities. Currently serve as research coordinator for the Homeless Veterans Reintegration Program National Technical Assistance Center at VCU. Also, the research coordinator for The Efficacy of Supported Employment for Homeless Individuals with Mental Health and Substance Abuse Barriers as well as VR&E Employment of Individuals with Severe Injuries Study.

United States Army, 824th QuarterMaster Co., Fort Bragg, North Carolina
U.S. Army Reserve Sergeant, August 2004-August 2007

Responsible for the health, training, and welfare of four soldiers. Ensure the safe and efficient rigging of parachutes and airdrop equipment.

University of Arizona, College of Public Health, Tucson, Arizona
Research Specialist and Data Manager, July 2003 – July 2004
Managed database and personnel for the Network for Information and Counseling (Arizona Smokers' Helpline).

University of Arizona, Biometry Unit, Tucson, Arizona
Graduate Student Intern, March 2003 – July 2003
Conducted graphic, descriptive, and inferential statistics along with exploratory analysis for a skin cancer grant.

United States Army
U.S. Army Reserve Soldier, June 1995-June 2003
Served as an Army Counterintelligence Agent in the U.S. and overseas (Korea and Japan). Responsible for demonstrating special collection techniques to obtain information utilizing a TS-SCI security clearance.

PUBLICATIONS

- Electrocardiographic Responses of Fibromyalgia Patients Undergoing Individualized Homeopathic Remedies Versus Placebo. (2004). *Thesis*
- Telework & Disability: A Literature Review and Implication for Workers Compensation Clients and Veterans with Disabilities. (2005).
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